

# CONTRIBUTIONS TOWARD A FLORA OF PANAMA<sup>1</sup>

V. COLLECTIONS CHIEFLY BY PAUL H. ALLEN, AND BY ROBERT E. WOODSON, JR. AND ROBERT W. SCHERY

ROBERT E. WOODSON, JR.

*Assistant Curator of the Herbarium, Missouri Botanical Garden  
Assistant Professor in the Henry Shaw School of Botany of Washington University*

AND ROBERT W. SCHERY

*Assistant in the Henry Shaw School of Botany of Washington University*

## LYCOPODIACEAE

(*W. B. Maxon, Washington, D. C.*)

LYCOPIDIUM HOFFMANNI Maxon—CHIRIQUÍ: Casita Alta to Cerro Copete, alt. 2300–3300 m., July 10, 1940, *Woodson & Schery 364*. New to Panama. Known previously only from Volcan Barba, Costa Rica, at 2500–2800 m.

LYCOPIDIUM ORIZABAE Underw. & Lloyd—CHIRIQUÍ: Casita Alta to Cerro Copete, alt. 2300–3300 m., July 10, 1940, *Woodson & Schery 365*. New to Panama. Heretofore known only from Orizaba, Mexico, and a single collection from Estrella, Costa Rica (*Stork 1959*).

## POLYPODIACEAE

(*W. B. Maxon, Washington, D. C.*)

ELAPHOGLOSSUM REVOLUTUM (Liebm.) Moore—CHIRIQUÍ: vicinity of Boquete, alt. 1200–1500 m., July 24–26, 1940. New to Panama. The specimens agree closely with type material collected in Mexico by Liebmann and with Cuban and Hispaniola specimens, of which a good series is at hand. *Elaphoglossum rampans* (Baker) Christ, founded on Wright's no. 3959, from Cuba, is synonymous.

## TAXACEAE

(*P. C. Standley, Chicago*)

PODOCARPUS **Allenii** Standl., sp. nov. Arbor excelsa 35 m. alta et ultra, trunco basi 1.5 m. diam., ramulis brevibus crassis sat

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dense foliatis; gemmae parvae vix ad 2 mm. longae, perulis crasse coriaceis apice rotundatis; folia alterna rigida coriacea anguste lanceolata, adulta 3.5–4.5 cm. longa 7–8 mm. lata, apicem rigidum fere spiniformem versus sensim attenuata, basi acuta et sessilia, costa supra prominente vel prominula, apicem versus minus prominente, subtus vix prominula saepius fere plana; caetera ignota.—PANAMÁ: moist upper region of Cerro Campana, alt. about 1000 m., April 21, 1941, *Allen 2437* (Herb. Field Mus., TYPE), 2424 (seedling); COCLÉ: hills north of El Valle de Antón, vicinity of La Mesa, alt. about 1000 m., Jan. 21, 1941, *Allen 2298*.

The collector's notes regarding the tree are as follows: "For nearly a year I have been picking up seedlings of this tree, anywhere from 45 cm. to 3.5 meters tall. They are everywhere in the hills above Campana, and north of El Valle, at elevations of 600 to perhaps 960 meters. Finally the mature trees have been located on Cerro Campana. The trees are about 33–36 meters tall, without branches for 18–21 meters. The huge columnar trunk is fully 1.5 meters in diameter, and covered with reddish brown, fissured bark somewhat resembling that of the California redwood."

It is with considerable diffidence that the writer proposes this new species of *Podocarpus*, although it seems to be quite as distinct as a good many other species that have been proposed in the genus. One might expect the Panama tree to be identical with *P. oleifolius* Don, common in the nearby mountains of Costa Rica, and extending southward to Peru. In Costa Rica the genus is confined, however, to the higher mountains, at 1400 to 3000 meters, and mostly at 2000 meters or more. *P. oleifolius* may be distinguished at once from *P. Allenii* by the fact that the costa is impressed rather than elevated on the upper leaf surface. So far as may be judged from leaf characters, *P. Allenii* is more closely related to *P. guatemalensis* Standl., of Guatemala and British Honduras, which also has the costa prominent upon the upper surface. *P. guatemalensis*, likewise, occurs at low elevations, descending to sea-level.



It is possible that ultimately *P. Allenii* will have to be combined with *P. guatemalensis*, but it is to be expected that flowers and fruit may furnish better characters for separating it. The adult leaves of the Panama tree are so much smaller than those of the northern one that it is believed by the writer that two distinct species are involved. The seedling leaves of *P. Allenii* are lance-linear, 9–12 cm. long, and 9–14 mm. wide. Mr. Allen states that the local name of this tree is *Cuahau*.

## ERIOCAULACEAE

(H. N. Moldenke, New York)

TONINA FLUVIATILIS Aubl.—CHIRIQUÍ: vicinity of Boquete, alt. 1200–1500 m., July 24–26, 1940, *Woodson & Schery 752*. Known to occur from Cuba and British Honduras to Colombia, Trinidad and Brazil, but has not previously been collected in Panama.

## BROMELIACEAE

(L. B. Smith, Cambridge, Mass.)

AECHMEA **Allenii** L. B. Smith, spec. nov. (pl. 19), acaulis, stolonibus robustissimis procreans; foliis subfasciculatis, erectis, 6–7 dm. longis, inflorescentiam multo superantibus, utrinque lepidibus minutis peradpressis obtectis, vaginis magnis, anguste ellipticis, integris, quam laminis haud atrioribus, laminis ligulatis, late acutis et mucronatis, basi nullo modo angustatis, ad 55 mm. latis, dense serrulatis, viridibus, concoloribus; scapo gracili, ad 35 cm. alto, albido-flocculoso; scapi bracteis magnis, erectis, dense imbricatis, oblanceolatis, acutis, membranaceis, pulchre roseis, ad apicem versus denticulatis, basi flocculosis; inflorescentia erecta, simplicissima, densissime ellipsoidea, 8–10 cm. longa, 4 cm. diametro; bracteis florigeris erectis, inferioribus eis scapi similibus et flores multo superantibus, supremis anguste lanceolatis, acuminatis, integris, sepala aequantibus vel quam eis paulo brevioribus; floribus sessilibus; sepalis liberis, valde asymmetricis, mucro erecto ad 6 mm. longo incluso ad 23 mm. longis, cum ovario dense albido-lepidotis; petalis delapsis solum cognitis, ca. 3 cm. longis, basi ligulis binis dentatis auctis, albis vel pallide lilacinis [! Allen]; ovario orbiculato, valde compresso et triangulato, ad 17 mm.



longo, tubo epigyno crateriformi, placentis interno loculorum angulo prope apicem affixis, ovulis caudatis.—COCLÉ: epiphytic, vicinity of La Mesa, north of El Valle de Antón, alt. 1000 m., May 12, 1941, *P. H. Allen 2378* (U. S. Nat. Herb., TYPE; Gray Herb. and Herb. Missouri Bot. Garden, photograph); trail to Las Minas, north of El Valle de Antón, alt. 1000 m., May 10, 1941, *P. H. Allen 2467* (U. S. Nat. Herb.).

The very showy rose scape-bracts of *Aechmea Allenii* are suggestive of *Ae. Mariae-Reginae*, but the large long-mucronate sepals and the large serrulate lower floral bracts immediately set it apart from this and all related species.

*AECHMEA TONDUZII* Mez & Pittier—DARIEN: epiphytic, rain forest, Cana-Cuasi Trail, near Camp 2, Chepigana District, alt. 1650 m., March 12, 1940, *M. E. & R. A. Terry 1529* (Herb. Field Mus.); epiphytic, rain forest, Cana-Cuasi Trail near crest, Chepigana District, alt. 1500 m., March 15, 1940, *M. E. & R. A. Terry 1592* (Herb. Field Mus.). Previously known from Costa Rica; identified by description.

*AECHMEA VEITCHII* Baker—DARIEN: rain forest, north slope of Cana-Cuasi Trail, Real District, alt. 1650 m., March 13, 1940, *M. E. & R. A. Terry 1545* (Herb. Field Mus.). Previously known from Costa Rica and Colombia.

*CATOPSIS WANGERINI* Mez & Wercklé—CHIRIQUÍ: Finca Lérída to Peña Blanca, alt. 1750–2000 m., July 9, 1940, *Woodson & Schery 319*. Previously known from Costa Rica.

*GUZMANIA DONNELLSMITHII* Mez ex Donn. Smith—COCLÉ: epiphytic, vicinity of La Mesa, north of El Valle de Antón, alt. 1000 m., May 12, 1941, *P. H. Allen 2382* (U. S. Nat. Herb.). Previously known from Costa Rica.

*GUZMANIA GLOMERATA* Mez & Wercklé—COCLÉ: epiphytic, north rim of El Valle de Antón near Cerro Turega, alt. 650–700 m., June 30, 1940, *Woodson & Schery 199*; DARIEN: epiphytic, Cana-Cuasi Trail, Chepigana District, alt. 1200 m., March 12, 1940, *M. E. & R. A. Terry 1526* (Herb. Field Mus.); same (Camp 2), alt. 600 m., *M. E. & R. A. Terry 1528* (Herb. Field Mus.). Previously known from Costa Rica; identified by description.



GUZMANIA GUATEMALENSIS L. B. Smith—COCLÉ: epiphytic, vicinity of La Mesa, north of El Valle de Antón, alt. 1000 m., May 12, 1941, *P. H. Allen 2368* (U. S. Nat. Herb.); DARIEN: epiphytic, rain forest, Cana-Cuasi Trail near crest, Chepigana District, alt. 1500 m., March 15, 1940, *M. E. & R. A. Terry 1589* (Herb. Field Mus.). Previously known from Guatemala and Colombia.

GUZMANIA MUSAICA (Linden) Mez—DARIEN: epiphytic, rain forest, crest, Cana-Cuasi Trail, Real District, alt. 1650 m., March 16, 1940, *M. E. & R. A. Terry 1608* (Herb. Field Mus.). Previously known from Colombia.

PITCAIRNIA VALERII Standley—PANAMÁ: terrestrial, Cerro Campana, alt. 1000 m., April 21, 1941, *P. H. Allen 2414* (U. S. Nat. Herb.). Previously known from Costa Rica.

THECOPHYLLUM ACUMINATUM L. B. Smith—PANAMÁ: epiphytic, summit of Cerro Campana, alt. 800–1000 m., Sept. 1, 1940, *P. H. Allen 2215* (Herb. Field Mus.). Previously known from Costa Rica.

THECOPHYLLUM CRASSIFLORUM Mez & Wercklé—CHIRIQUÍ: terrestrial, Potrero Muleto to summit, Volcán de Chiriquí, alt. 3500–4000 m., July 13–15, 1940, *Woodson & Schery 453*. Previously known from Costa Rica.

THECOPHYLLUM ORORIENSE (Mez) Mez—CHIRIQUÍ: Finca Lérída to Peña Blanca, alt. 1750–2000 m., July 9, 1940, *Woodson & Schery 321*. Previously known from Costa Rica. Bracts green with orange tips instead of yellow and scarlet, but the plant otherwise close to the type.

TILLANDSIA ACOSTAE Mez & Tonduz—CHIRIQUÍ: epiphytic, vicinity of Puerto Armuelles, alt. 0–75 m., July 28–31, 1940, *Woodson & Schery 823*. Previously known from Costa Rica.

TILLANDSIA COMPLANATA Benth.—CHIRIQUÍ: epiphytic, vicinity of Bajo Mona and Quebrada Chiquero, alt. 1500 m., July 18, 1940, *Woodson & Schery 602*. Previously known from Costa Rica, the West Indies and northwestern South America.

TILLANDSIA INCURVA Griseb.—CHIRIQUÍ: epiphytic, vicinity of Finca Lérída, alt. 1750 m., July 7–11, 1940, *Woodson &*



*Schery 223*. Previously known from Costa Rica, southern Florida, Cuba, Jamaica, Venezuela, Colombia and Bolivia.

VRIESIA PACHYSPATHA Mez & Wercklé—CHIRIQUÍ: epiphytic, vicinity of Bajo Chorro, alt. 1900 m., July 20–22, 1940, *Woodson & Schery 679*. Previously known from Costa Rica; identified from description.

## LILIACEAE

ANTHERICUM APODASTANTHUM Donn. Sm.—CHIRIQUÍ: Potrero Muleto, Volcan de Chiriquí, alt. 3500 m., July 13, 1940, *Woodson & Schery 379*. Previously known from Guatemala and Costa Rica.

ANTHERICUM MACROPHYLLUM Baker—COCLÉ: north rim of El Valle de Antón, near Cerro Turega, alt. 650–700 m., June 30, 1940, *Woodson, Allen & Schery 178*. Previously known from Costa Rica. This is probably the same plant recently described as *Anthericum panamense* Standl. (*Field Mus. Publ. Bot. Ser. 22*: 327. 1940), based on a collection (*Allen 2195*) from the same locality. Our plants agree satisfactorily with Baker's original description.

## AMARYLLIDACEAE

ZEPHYRANTHES CITRINA Baker—BOCAS DEL TORO: Isla Colon, alt. 0–120 m., Aug. 25, 1940, *H. von Wedel 543*. Previously known from Tropical America according to Baker, with no locality given. Type supposedly came from British Guiana. The species was described from a living specimen sent to England and cultivated there. It has since been introduced to Florida gardens.

ZEPHYRANTHES ROSEA Lindl.—BOCAS DEL TORO: Isla Colon, alt. 0–120 m., Aug. 25, 1940, *H. von Wedel 544*. Previously known from Cuba and described from a horticultural specimen brought to England. The species has since been introduced to Florida.

ZEPHYRANTHES TUBISPATHA Herb.—BOCAS DEL TORO: Isla Colon, alt. 0–120 m., Aug. 25, 1940, *H. von Wedel 542*. Previously known from Argentina? and Jamaica according to the *Bot. Mag.* A specimen, supposedly this species, from Tobago



is in the herbarium of the Missouri Botanical Garden. The species has been introduced into Florida where it is cultivated.

DIOSCOREACEAE

(*C. V. Morton, Washington, D. C.*)

DIOSCOREA STANDLEYI Morton—CHIRIQUÍ: vicinity of Bajo Chorro, alt. 1900 m., July 21, 1940, *Woodson & Schery 664, 652*. Previously known from Costa Rica.

MARANTACEAE

CTENANTHE DASYCARPA (Donn. Sm.) K. Sch.—BOCAS DEL TORO: Isla Colon, Aug. 14, 1940, *H. von Wedel 433*. Previously known only from Costa Rica.

ORCHIDACEAE

(*Louis O. Williams, Cambridge, Mass.*)

PALMORCHIS **trilobulata** L. O. Williams, sp. nov. (pl. 20). Herbae terrestres, caespitosae, usque ad 35 cm. altae. Folia subchartacea, plicata, elliptica, acuta vel acuminata. Inflorescentia terminalis, pauciflora; bracteae ellipticae vel lanceolato-ovatae, acutae vel acuminatae. Sepalum dorsale spathulato-oblancheolatum, obtusum, tri- vel quinquenervium. Sepala lateralia spathulato-oblancheolata, obtusa, arcuata, tri- vel quinquenervia. Petala lineari-oblancheolata, obtusa, leviter arcuata, trinervia. Labellum oblancheolato-flabellatum, trilobulatum; lobi laterales rotundati, obtusi; lobus medius transverse oblongus, lobos laterales paulo excedens. Columna generis.

Caespitose, terrestrial herbs up to 35 cm. tall. Stems up to about 15 cm. long and 4 mm. in diameter, bearing 3-4 leaves near the apex. Leaves subchartaceous, plicate; lamina of the mature leaves 10-22 cm. long and 3-6 cm. broad, elliptic, acute or acuminate, with 7 prominent nerves; petiole up to 7 cm. long, plicate, nervose. Inflorescence up to 7 cm. long, terminal, much exceeded by the leaves, few-flowered; rachis about 3-4 cm. long; bracts 1-1.5 cm. long and 1.5-5 mm. broad, elliptic to lanceolate-ovate, acute or acuminate. Flowers about 13 mm. long, white. Dorsal sepal about 12 mm. long and 3 mm. broad, spatulate-oblancheolate, obtuse, 3-5-nerved. Lateral sepals 10-



12 mm. long and 3–4 mm. broad, arcuate, spatulate-oblongate, obtuse, 3–5-nerved, somewhat carinate along the mid-nerve dorsally. Petals 11–12 mm. long and about 2 mm. broad, linear-oblongate, obtuse, somewhat arcuate, 3-nerved. Lip 10–12 mm. long and about 5–6 mm. broad near the apex, oblongate-flabellate, trilobulate at the apex, the base or claw adnate to the column along its median line for about 2–3 mm., more or less enfolding the column; disc of the lip pubescent, especially so toward the base and less so toward the apex, fleshy-thickened toward the apex; lateral lobes about 1 mm. long (free portion), rounded, obtuse; mid-lobe about 1.5 mm. long, transversely oblong, blunt, slightly exceeding the lateral lobes. Column slender, arcuate, about 10 mm. long; anther operculate, incumbent; pollinia 4, exappendiculate, ceraceous or appearing so, pyriform.—COCLÉ: terrestrial, flowers pure white; region north of El Valle de Antón, trail to Las Minas, alt. about 1000 m., May 10, 1941, *Allen 2463* (Herb. Ames, TYPE); terrestrial, flowers white; El Valle de Antón and vicinity, alt. 500–700 m., July 23–27, 1935, *Seibert 459* (Herb. Missouri Bot. Gard., Herb. Field Museum, Herb. Ames).

*Palmorchis trilobulata* is not easily confused with any previously described species of the genus. It is, perhaps, most closely allied to *P. Powellii* (Ames) Schweinf. & Correll, from which it is easily distinguished both vegetatively and by the size of the flowers, and especially by the very different lip.

PELEXIA FUNCKIANA (Rich. & Gal.) Schltr.—COCLÉ: terrestrial, flowers green; vicinity of La Mesa, hills north of El Valle de Antón, alt. about 1000 m., Jan. 21, 1941, *Allen 2315*. Previously known from Mexico, British Honduras, Guatemala and Costa Rica, possibly also in South America.

ACOSTAEA COSTARICENSIS Schltr.—COCLÉ: epiphytic, flowers tan; hills north of El Valle de Antón, alt. about 1000 m., Jan. 21, 1941, *Allen 2352*. The genus is new to Panama, previously known from Costa Rica.

PLEUROTHALLIS CONCAVIFLORA C. Schweinf.—COCLÉ: epiphytic; vicinity of El Valle de Antón, alt. about 600 m., Dec. 10, 1939, *Allen 2058*; epiphytic; vicinity of La Mesa, hills north of



El Valle de Antón, alt. about 1000 m., Jan. 21, 1941, *Allen 2317*. Previously known from Costa Rica.

*PLEUROTHALLIS macrantha* L. O. Williams, sp. nov. (pl. 21, figs. 1-6). Herbae caespitosae, epiphyticae vel terrestres, usque ad 23 cm. altae. Folia elliptica, obtusa, coriacea. Inflorescentia racema pluriflora quam folia duplo longior. Sepalum dorsale ellipticum vel oblanceolato-ellipticum, acutum. Sepala lateralia plusminusve usque ad apices connata, oblongo-oblanceolata, acuta. Petala oblongo-obovata, leviter obliqua, truncata vel paulo retusa. Labellum subteres et supra sulcatum, prope apicem expansum et basi biauriculatum et tricallousum. Columna generis.

Caespitose, epiphytic or terrestrial herbs up to 23 cm. tall. Secondary stems 6-8 cm. long, subequal to the leaves in length on mature plants, almost completely invested with 1 or 2 loose, scarious sheaths, unifoliate. Leaves 4-7 cm. long and 1.5-2.8 cm. broad, elliptic, obtuse, coriaceous. Inflorescence a several-flowered raceme, about twice exceeding the subtending leaves; sheath at the base of the peduncle short, about 9-11 mm. long; bracts 6-7 mm. long, ovate-lanceolate, scarious, semiamplexicaul. Dorsal sepal 16-20 mm. long and 6-8 mm. broad, elliptic to oblanceolate-elliptic, acute, 3-nerved, keeled dorsally along the mid-nerve. Lateral sepals 16-18 mm. long and together 6-8 mm. broad, connate almost to their apices, oblong-oblanceolate, acute, together 4-nerved, somewhat gibbous at the base. Petals about 9-11 mm. long and 5-6 mm. broad near the apex, oblong-obovate, slightly oblique, truncate or slightly retuse, 3-nerved, with an inconspicuous cushion-like callus near the base. Lip 10-12 mm. long and 3-4 mm. broad toward the apex when expanded, about 2 mm. broad near the middle and 3 mm. broad across the auriculate base, subterete and sulcate above, somewhat laterally compressed, expanding toward the apex and into 2 auricles at the base, with 3 small calluses between the basal auricles. Column of the genus.—CHIRIQUÍ: terrestrial, flowers pale greenish-yellow, spotted chocolate; vicinity of Bajo Chorro, alt. 1900 m., July 20-22, 1940, *Woodson & Schery 666* (Herb. Ames, TYPE).



*Pleurothallis macrantha* seems to be most closely allied to *P. pachyglossa* Lindl., with which it perhaps shares the distinction of having the largest flowers of the genus. *Pleurothallis macrantha* is distinguished from *P. pachyglossa* by the truncate petals, the laterally compressed lip, which differs in several characters, and by the details of the sepals and clinandrium.

PLEUROTHALLIS MURICATA Schltr. (*P. diuturna* Schltr.)—COCLÉ: epiphytic on Calabash tree; El Valle de Antón, alt. about 800 m., Jan. 20, 1941, *Allen 2294*. New to Panama under this name.

MALAXIS SIMILLIMA (Reichb. f.) O. Kuntze—CHIRIQUÍ: terrestrial; vicinity of Bajo Chorro, alt. 1900 m., July 20–22, 1940, *Woodson & Schery 685*. New to Panama, previously known from Costa Rica.

EPIDENDRUM (§ EUEPIDENDRUM) **Allenii** L. O. Williams, sp. nov. (pl. 22, figs. 3–5). Herbae epiphyticae, erectae, usque ad 3 dm. altae. Caules ancipiti. Folia elliptica vel lanceolata, acuta vel breviter acuminata. Sepalum dorsale lanceolatum, obtusum. Sepala lateralia sepalo dorsali similia sed leviter arcuata. Petala linearia, uninervia. Labellum unguiculatum; lamina subreniformis, subintegra vel obscure trilobata. Columna sectionis.

Erect epiphytic herbs up to about 3 dm. tall. Stems ancipitous, covered with the bases of the 3 to 6 leaves. Leaves 4–12 cm. long, 1.2–3 cm. broad, elliptic to lanceolate, acute or short-acuminate. Peduncle about 10–15 cm. long, ancipitous, bialate, the wings prominent at the base but disappearing at about the middle of the peduncle. Inflorescence short, the rachis covered with the scarious, imbricated bracts; bracts up to about 1 cm. long. Dorsal sepal about 10 mm. long and 4 mm. broad, lanceolate, obtuse, 5–7-nerved, with a short dorsal apicule near the apex. Lateral sepals similar to the dorsal sepal except somewhat arcuate. Petals about 10 mm. long and 0.75 mm. broad, linear, 1-nerved. Lip unguiculate; the lamina about 10 mm. long and 12 mm. broad, subreniform, subentire or obscurely 3-lobed, the terminal lobe inconspicuous and slightly



retuse, with two approximate submammillar calluses at the base. Column of the section, about 7 mm. long.—COCLÉ: epiphytic, leaves and stem red, sepals and petals pale pink, labellum white; hills north of El Valle de Antón, about 1000 m. alt., July 14, 1940, *Allen 2203* (Herb. Ames, 58635, TYPE).

*Epidendrum Allenii* seems not to be closely allied to any Central American species of *Epidendrum*, perhaps nearest to *E. panamense* Schltr. and to *E. Lankesteri* Ames (which may be synonyms), but differs from both of these by the very large differently shaped lip, by the wing on the peduncle and by other details.

EPIDENDRUM CRASSILABIUM Poepp. & Endl.—COCLÉ: *Allen 2205; Woodson & Schery 204*. A not uncommon species but apparently new to Panama. Previously known from Costa Rica, the West Indies, Brazil, Dutch Guiana, British Guiana, Venezuela, Colombia, Ecuador and Peru.

EPIDENDRUM DIFFORME Jacq. var. FIRMUM (Reichb. f.) AHS.—CHIRIQUÍ: epiphyte; Finca Lérída to Peña Blanca, alt. 1750–2000 m., July 9, 1940, *Woodson & Schery 298*. This variety has been reported previously from Guatemala and Costa Rica.

EPIDENDRUM (§ EUEPIDENDRUM) **ellipsophyllum** L. O. Williams, sp. nov. (pl. 22, figs. 1–2). Herbae epiphyticae usque ad 25 cm. altae. Caules leviter fusiformes et indurati. Folia elliptica, breviter acuminata. Sepala elliptica vel oblanceolata, obtusa. Petala oblanceolata, obtusa. Labellum unguiculatum; unguis columnae adnata; lamina orbiculari-ovata, trilobata, lamellata, lobi laterales parvi. Columna sectionis.

Erect epiphytic herbs up to about 25 cm. tall. Stems slightly fusiform and indurated, with only the annual leaves persisting and the sheaths of the older leaves becoming scarious and disintegrating. Leaves 11–12 cm. long and 2–2.8 cm. broad, elliptic, short-acuminate, usually only 2 or 3 persisting. Peduncles up to about 4 cm. long, ancipitous, generally covered with imbricated bracts. Inflorescence short, 1-, or at most, few-flowered; bracts up to about 2 cm. long, cucullate, lanceolate-triangular, acute. Flowers green, segments stiff and coriaceous. Sepals 10–12 mm. long and 3–4 mm. broad, elliptic to



oblanceolate, obtuse, 5-nerved. Petals about 10–11 mm. long and 3–4 mm. broad, oblanceolate, obtuse, with 3 principal nerves. Lip unguiculate, the claw mostly adnate to the column; lamina 5–6 mm. long and 5–6 mm. broad, orbicular-ovate in outline, 3-lobed, the lateral lobes small and situated toward the base of the lip, with a 2-ridged lamellate callus plate at the junction of the claw and the lamina. Column slender, about 8 mm. long; clinandrium entire and obtuse; pollinia not seen.—COCLÉ: epiphytic, flowers green; hills north of El Valle de Antón, 1000 m. alt., June 23, 1940, *Allen 2178* (Herb. Ames, 58640, TYPE).

*Epidendrum ellipsophyllum* does not seem to be closely allied to any other Central American species but is perhaps nearest to *E. Lankesteri* Ames.

EPIDENDRUM (§ EUEPIDENDRUM) **gibbosum** L. O. Williams, sp. nov. (pl. 21, figs. 7–10). Herbae epiphyticae vel terrestres usque ad 4 dm. altae. Folia lineari-oblonga vel lineari-lanceolata, obtusa, coriacea. Inflorescentia brevis, racemosa, pauciflora. Sepalum dorsale elliptico-oblongum, obtusum. Sepala lateralia oblongo-ovata, obtusa. Petala elliptica vel oblongo-oblanceolata, obtusa. Labellum late oblongum vel suborbiculare, obtusum et leviter emarginatum, basi cordatum, carnosum, leviter gibbosum. Columna sectionis.

Epiphytic or terrestrial herbs up to 4 dm. tall. Stems simple or branched below, covered with the ample leaf-sheaths. Leaves 9–14 cm. long and 15–18 mm. broad, linear-oblong to linear-lanceolate, obtuse and unequally bilobed, articulate, coriaceous. Leaf-sheaths ample, somewhat inflated, disintegrating with age. Inflorescence short, racemose, few-flowered; bracts 10–18 mm. long and 12–22 mm. broad, cochleate, acute, scarious. Dorsal sepal 10–12 mm. long and 5–6 mm. broad, elliptic-oblong, obtuse, apiculate, 5–7-nerved. Lateral sepals 10–12 mm. long and 6–7 mm. broad, oblong-ovate, obtuse, apiculate dorsally, 7-nerved. Petals about 10 mm. long and 5 mm. broad, elliptic to oblong-oblanceolate, obtuse, 5–7-nerved. Lip about 11–12 mm. long and 9–10 mm. broad, broadly oblong or suborbicular, obtuse or shallowly emarginate, cordate at the



base, fleshy, especially tumid along the median nerve toward the apex, with 2 inconspicuous calluses at the base, basal portion somewhat gibbous and partly enfolding the column. Column of the section, about 4 mm. long.—CHIRIQUÍ: terrestrial, flowers maroon; Casita Alta to Cerro Copete, alt. 2300–3300 m., July 10, 1940, *Woodson & Schery 367* (Herb. Missouri Bot. Gard., TYPE).

*Epidendrum gibbosum* is most closely allied to *E. barbae* Reichb. f., a species native of Costa Rica, from which it may be distinguished by the shape and base of the lip and the different callus thickenings. The leaves of *E. gibbosum* are quite obtuse and unequally bilobed, while those of *E. barbae* are more or less acute and not unequally bilobed. The column of *E. gibbosum* is situated well down within the gibbous base of the lip while that of *E. barbae* is not. Although the specimen of this species was terrestrial, it is a potential epiphyte.

EPIDENDRUM (§ EUEPIDENDRUM) **pendens** L. O. Williams, sp. nov. (pl. 23). Herbae epiphyticae, pendentes, usque ad 45 cm. longae. Folia elliptica vel elliptico-lanceolata, coriacea, disticha, marginata. Inflorescentia uni-pauciflora. Sepalum dorsale oblongo-oblancheolatum, acutum, carnosum. Sepala lateralia elliptica, acuta, carnosum. Petala linearia, obtusa vel acuta, carnosum. Lamina labelli trilobulata, suborbicularis, nervo medio crassato et nervis radiantibus crassatis ornata; lobi laterales rotundati; lobus medius subquadratus, emarginatus. Columna generis.

Pendent, epiphytic herbs about 45 cm. long. Leaves 9–15 cm. long and 2–3.5 cm. broad, elliptic to elliptic-lanceolate, coriaceous, distichous, marginate, gray, deciduous; leaf-sheaths loose, completely investing the stem, pergameneous, ancipitous, the abscission line prominent. Inflorescence of 1 or few large, terminal flowers subtended by a leaf-like sheath up to 3 cm. long. Flowers large for the genus, green. Dorsal sepal about 5 cm. long and 1.2 cm. broad, oblong-oblancheolate, acute, fleshy, with 5–7 main nerves. Lateral sepals 4.3–4.8 cm. long and 1.5 cm. broad, elliptic, acute, fleshy, with about 7 main nerves. Petals about 4.5–5 cm. long and 2 mm. broad,



linear, somewhat narrowed to the base, obtuse or acute, fleshy, 1-nerved. Lip with the claw adnate with the column to the apex of the column; lamina about 2.5–3 cm. long and 3 cm. broad, 3-lobed, suborbicular in general outline, with a thickened central nerve and with thickened nerves or ridges radiating from it and covering the remainder of the lip, lateral lobes rounded, about 1.5 cm. long, mid-lobe 1–1.5 cm. long and about 1.5 cm. broad, subquadrate, emarginate. Column 1.5–2 cm. long and 6–8 mm. in diameter at the apex, fleshy.—COCLÉ: epiphytic, pendent plants, foliage gray, flower terminal, green; vicinity of La Mesa, El Valle de Antón, alt. about 1000 m., June 22, 1941, *Allen 2570* (Herb. Ames, TYPE).

*Epidendrum pendens* is most closely allied to *E. Medusae* (Reichb. f.) Pfitz., a rare plant of the Ecuadorian Andes, from which it is easily distinguished by the 3-lobed, nonfimbriated lip. If the genus *Nanodes* Lindl. were maintained this species would be the third one known.

Mr. Allen's note (in lit.) is of considerable interest: "Epiphytic, entire plant directly pendent, foliage distichous, stiff, gray, flowers terminal, green. This is one of the most remarkable orchids I have ever seen. The foliage is a dead, almost lead-gray, although the plant was the picture of perfect health. The flower is the sort of thing that you would expect a child to construct, after being told in a general way what the floral pattern of an orchid should be."

The description is from a dried plant and a single flower preserved in spirits.

EPIDENDRUM RAMOSUM Jacq. var. **angustifolium** (Cogn.) L. O. Williams, comb. nov. (*E. imbricatum* Lindl. var. *angustifolium* Cogn. in Mart. Fl. Bras. 3<sup>5</sup>: 171. 1898, as var. *angustifolia*; *E. imbricatum* Lindl. Gen. & Sp. Orch. Pl. 110. 1831, non Lam.; *E. ramosum* Jacq. var. *imbricatum* (Lindl.) Ames, Hubbard & Schweinf. in Bot. Mus. Leafl. Harv. Univ. 2: 47. 1934). —BOCAS DEL TORO: epiphytic, Río Cricamola, between Finca St. Louis and Konkintoë, alt. 10–15 m., Aug. 12–16, 1938, *Woodson, Allen & Seibert 1898*. Cogniaux' varietal name is correct



for this unit when it is maintained as a variety. The specimen cited above is the only one from Panama.

**SCAPHYGLOTTIS Lindeniana** (Rich. & Gal.) L. O. Williams, comb. nov. (*Hexadesmia fasciculata* Brongn. in Ann. Sci. Nat. Bot. II, 17: 44. 1842, non *Scaphyglottis fasciculata* Hook.; *H. Lindeniana* Rich. & Gal. in Ann. Sci. Nat. Bot. III, 3: 23. 1845; *H. rhodoglossa* Reichb. f. in Bonplandia 4: 326. 1856; *H. pachybulbon* Schltr. in Fedde Repert. Beih. 17: 26. 1922; *H. falcata* C. Schweinf. in Bot. Mus. Leaflet Harv. Univ. 8: 45, pl. 1940).—COCLÉ: epiphyte, flowers light green; hills north of El Valle de Antón, alt. 800–1000 m., Jan. 2, 1941, *Allen 2291*. An extremely variable species as to flower size, the present specimen having very small flowers. Previously known from Mexico to Panama.

**SCAPHYGLOTTIS** (§ **HEXADESMIA**) **tenella** L. O. Williams, sp. nov. (pl. 24). Herbae epiphyticae, tenellae, caespitosae, usque ad 5 dm. altae. Caules elongati, tenelli, sub apicibus fusiformes. Folia linearia vel lineari-lanceolata. Sepala lanceolata, acuta. Petala oblongo-lanceolata, acuta vel obtusa. Labellum rhombico-lanceolatum. Columna sectionis.

Slender, caespitose, epiphytic herbs up to about 5 dm. tall. Stems elongated, slender, becoming naked and in age swollen and fusiform below the summit, bifoliate. Leaves 20–23 cm. long and 7–16 mm. broad, linear to linear-lanceolate, acute or the apex minutely bilobulate. Inflorescence terminal in the axis of leaves, a fascicle of 1 or few flowers. Dorsal sepal 8–9 mm. long and 3–3.5 mm. broad, lanceolate, acute, 5-nerved. Lateral sepals 8–9 mm. long and 3–4 mm. broad, lanceolate, acute, 5–7-nerved. Petals 8–9 mm. long, 3–3.5 mm. broad, oblong-lanceolate, acute or obtuse, 3- or 5-nerved. Lip about 8–9 mm. long and 4–5 mm. broad, rhombic-lanceolate but somewhat constricted above the middle, fleshy. Column of the section, about 5 mm. long; pollinia 6, waxy.—COCLÉ: epiphytic; hills north of El Valle de Antón, alt. 800–1000 m., Nov. 21, 1940, *Allen 2276* (Herb. Ames, TYPE).

*Scaphyglottis tenella* is allied to *S. pulchella* (Schltr.) L.



Wms.<sup>1</sup> but is easily distinguished by the smaller flowers and differently shaped lip.

*ZYGOPETALUM parviflorum* L. O. Williams, sp. nov. (pl. 25). Herbae robustae, terrestres vel epiphyticae, usque ad 1 m. altae. Folia lineari-elliptica vel elliptica, acuta vel acuminata, plicata. Scapus bracteosus; inflorescentia racemosa, pluri-multi-flora; bracteae lineares vel lineari-lanceolatae, acutae. Sepalum dorsale oblongo-ovatum, acutum, carnosum. Sepala lateralia oblongo-ovata, obtusa, carnosum. Petala oblonga, obtusa, leviter obliqua. Labellum oblongum, panduratum, apice rotundatum, prope basim callo lunato ornatum. Columna generis.

Robust, terrestrial or epiphytic herbs up to 1 m. tall. Stems leafy, short, becoming thickened into pseudobulbs, up to 9 cm. long and 1.5 cm. thick. Leaves 30–70 cm. long and 2.5–7 cm. broad, linear-elliptic to elliptic, acute or acuminate, plicate, attenuated at the base into a petiole. Scape up to 1 m. long, with several bracts; inflorescence racemose, several-many-flowered, bracts 5–14 mm. long, linear to linear-lanceolate, acute. Dorsal sepal about 10 mm. long and 5 mm. broad, oblong-ovate, acute, fleshy. Lateral sepals 10–11 mm. long and 5–6 mm. broad, oblong-ovate, obtuse, 5-(7-)nerved, fleshy. Petals about 7–8 mm. long and 4–4.5 mm. broad, oblong, obtuse, slightly oblique, 5-nerved. Lip 7–8 mm. long and 6.5–7.5 mm. broad, oblong, pandurate, about 2 mm. broader above the middle than below the middle, the apex broadly rounded, with a transverse, lunate callus at the base, fleshy. Column of the genus.—CHIRIQUÍ: terrestrial, flowers purple, lip violet, column white; vicinity of Bajo Chorro, alt. 1900 m., July 20–22, 1940, *Woodson & Schery 605* (Herb. Ames, TYPE); in rain forest, Bajo Chorro, Boquete District, alt. 6000 ft., Feb. 28, 1938, *Davidson 345*.

*Zygopetalum parviflorum* is not closely allied to any other species of the genus which is known to me. The flowers are much the smallest of the racemose species of the genus. The

<sup>1</sup> *SCAPHYGLOTTIS pulchella* (Schltr.) L. O. Williams, comb. nov. (*Ramonia pulchella* Schltr. in Fedde Repert. Beih. 19: 295. 1923).



present species resembles a *Euzygopetalum* in all respects except the small size of the flowers.

**MAXILLARIA Biolleyi** (Schltr.) L. O. Williams, comb. nov. (*Ornithidium Biolleyi* Schltr. in Fedde's Repert. **9**: 29. 1910).—CHIRIQUÍ: epiphyte in rain forest; Bajo Chorro, Boquete District, alt. about 2000 m., Jan. 14, 1938, *Davidson 125*. Known in Costa Rica and Panama.

**MAXILLARIA Bradeorum** (Schltr.) L. O. Williams, comb. nov. (*Camaridium Bradeorum* Schltr. in Fedde's Repert. Beih. **19**: 141. 1923).—CHIRIQUÍ: epiphyte in rain forest; Bajo Chorro, Boquete District, alt. about 2000 m., Jan. 13, 1938, *Davidson 118*. Known in Costa Rica and Panama.

**MAXILLARIA fulgens** (Reichb. f.) L. O. Williams, comb. nov. (*Ornithidium fulgens* Reichb. f. Beitr. Orch. Cent. Am., p. 76. 1866).—COCLÉ: epiphytic; hills north of El Valle de Antón, alt. 800–1000 m., Nov. 21, 1940, *Allen 2256*. Previously recorded from Costa Rica.

**MAXILLARIA umbratilis** L. O. Williams, nom. nov. (*Camaridium nutantiflorum* Schltr. in Beih. Bot. Centralbl. **36**, Abt. 2: 417. 1918, non *Maxillaria nutantiflora* Schltr.).—CHIRIQUÍ: epiphyte in rain forest; Bajo Chorro, Boquete District, alt. about 2000 m., Feb. 18, 1938, *Davidson 308*. Known in Costa Rica and Panama.

**ONCIDIUM PANDURIFORME** Ames & Schweinf.—CHIRIQUÍ: epiphyte; vicinity of Bajo Chorro, alt. 1900 m., July 20–22, 1940, *Woodson & Schery 704*. Previously recorded from Costa Rica.

**LEOCHILUS GRACILIS** Schltr.—COCLÉ: epiphytic, growing on Calabash, sepals and petals yellow, striped reddish-brown, lip yellow with spot of red at base, pseudobulbs and leaves dark bronzy red; El Valle de Antón, alt. about 800 m., Jan. 20, 1941, *Allen 2295*. Previously recorded from Honduras and Costa Rica.

**CAMPYLOCENTRUM BRENESII** Schltr.—CHIRIQUÍ: epiphyte; vicinity of Bajo Mona and Quebrada Chiquero, alt. 1500 m., July 18, 1940, *Woodson & Schery 579*. New to Panama, previously known from Costa Rica.



## PIPERACEAE

(William Trelease, Urbana, Ill.)

**PEPEROMIA Scheryi** Trel., spec. nov. Herba terrestris sat magna glabra; caulibus inferne crassiusculis superne gracilibus; foliis alternatis peltatis rotundato-ovatis breviter acuteque acuminatis basi aliquantulum concavis ca. 13 cm. longis 8.5 cm. latis, petiolis gracilibus 5–7 cm. longis; spicis solitariis terminalibus ca. 100 mm. longis 5 mm. crassis, pedunculo gracili ca. 2 cm. longo ad apicem in ramulo 2-bracteato ca. 3 cm. longo gesto; baccis elongato-ovoideis rostratis, stigmate ad basim in rostro anteriori gesto.—CHIRIQUÍ: Quebrada Velo, vicinity of Finca Lérida, alt. ca. 1800 m., July 8, 1940, *Woodson & Schery 247* (Herb. Univ. Illinois, TYPE).

**PIPER fagopyricarpum** Trel., spec. nov. Frutex parvus glaber; internodiis elongatis gracillimis; foliis lanceolato-ellipticis apice acute caudatis basi acutis ca. 12 cm. longis 4 cm. latis omnino pinnate nervatis, nervis utraque latere ca. 10, post exsiccationem firme chartaceis, petiolis 0.5 cm. longis; spicis ca. 40 mm. longis 5 mm. crassis, pedunculo gracili 10 mm. longo; baccis sulcate ovoideis apiculatis, stigmatibus parvis.—CHIRIQUÍ: vicinity of Puerto Armuelles, alt. 0–75 m., July 28–31, 1940, *Woodson & Schery 852* (Herb. Univ. Illinois, TYPE).

## LORANTHACEAE

**PSITTACANTHUS Scheryi** Woodson, spec. nov. (*Eupsittacanthus Ligulati*). Frutex parasiticus omnino glaber; ramis ramulisque crassis teretibus ad nodos haud incrassatis continuis. Folia opposita vel subopposita breviter petiolata inaequaliter rhombo-ovata apice late obtusa vel subrotundata basi latissime cuneata petiolo brevissimo incluso 9–11 cm. longa 6.0–9.5 cm. lata valde coriacea olivacea nervo medio immerso nervis lateralibus penninerviis et vix sensis. Inflorescentiae laterales fasciculatae congestae; pedunculis foliorum petiolos subaequantibus; pedicellis ca. 0.5 cm. longis. Flores gemini inferne aurantiaci superne lutei; cupula prorae simili submembranacea margine integro ca. 0.2 cm. longa 0.1 cm. lata; calyculo urceolato ca. 0.25 cm. alto ostio 0.2 cm. diam. obconico



margine integro; perigonio gracili maturitate 3.2 cm. longo prope basim conspicue (ca. 0.2 cm. diam.) dilatato; lobis 6 basi inconspicue incrassato-appendiculatis; antheris basifixis late oblongis 0.2 cm. longis, filamentis invicem inaequilongis 2.0–2.3 cm. longis paulo supra medium perigonii adnatis; stigmatate late fusiformi, stylo perigonium subaequante.—CHIRIQUÍ: vicinity of Bajo Mona and Quebrada Chiquero, alt. 1500 m., July 18, 1940, *Woodson & Schery 581* (Herb. Missouri Bot. Garden, TYPE).

This striking species is closely related to *Ps. dilatatus* A. C. Smith, of Colombia, but has much broader leaves and a smaller calyculus with entire margin. The plant from which the type specimen was obtained was a magnificent epiphytic shrub of many stout branches, several of which were nearly 6 feet in height.

#### BALANOPHORACEAE

CORYNAEA CRASSA Hook f.—CHIRIQUÍ: thick bamboo thicket, below Potrero Muleto, Volcan de Chiriquí, alt. ca. 3500 m., July 13–15, 1940, *Woodson & Schery 470*. Previously known from Costa Rica and Colombia. Apparently parasitic on the roots of bamboo. The tuberous rhizomes attain a diameter of nearly a foot.

#### ANNONACEAE

CYMBOPETALUM *lanugipetalum* Schery, spec. nov. Arbor; ramis novellis brunneo-pubescentibus, internodiis ca. 2 cm. longis; foliis elliptico-lanceolatis subsessilibus, petiolis ca. 0.1–0.2 cm. longis, laminis coriaceis utrinque glabris apice angustis cuspidatisque basi fere obtusis inaequilateraliterque subrotundis 15–27 cm. longis 5–7 cm. latis nervis subtus prominentibus secundariis sat distantibus inter se laxe reticulatis prope marginem late arcuatim confluentibus deinde usque marginem reticulatis. Flores solitarii subterminales; pedicello pendulo ca. 20 cm. longo; sepalis minutis ca. 0.3 cm. longis; petalis interioribus carnosissimis cucullatis minute velutinis sessilibus triangulari-ovatis ca. 3 cm. longis 1.5 cm. latis venis



profunde immersis; petalis exterioribus coriaceis subtriangularibus sparse puberulis 1.8–2.0 cm. longis 1.0–1.6 cm. latis; staminibus multis capitatis ca. 0.5 cm. longis.—COCLÉ: north rim El Valle de Antón near Cerro Turega, alt. 650–700 m., June 30, 1940, *Woodson & Schery 191a* (Herb. Missouri Bot. Gard., TYPE).

This species is characterized by its moderately long pendulous pedicels, glabrous leaves, large fleshy velvety-pubescent inner petals, and very small calyx lobes. The leaves are elliptic-lanceolate with very prominent mid-veins and prominent confluent lateral veins which unite near the leaf margin, giving a lobed appearance to the reticulum. The outer petals are not fleshy and are only slightly more than half as large as the inner ones. The flowers are green.

*DESMOPSIS glabrata* Schery, spec. nov. Arbuscula circ. 3 m. alta; ramulis gracilibus novellis lentissimis pubescentibus vel glabratis, cortice rufo-bruneo, internodiis 3–6 cm. longis; foliorum laminis subcoriaceis, utrinque glabratis, ellipticis, basi cuneatis ibique in petiolum decurrentibus, apice gradatim acuminatis, acumine 5–15 mm. longo, 10–20 cm. longis, 3–6.5 cm. latis, costa supra leviter impresso, subtus valde prominente, nervis lateralibus utrinque 6–8 arcuatim adscendentibus, circ. 5 mm. infra marginem conjunctis; petiolis glabratis asperis, supra canaliculatis, circ. 5 mm. longis; inflorescentiis foliis oppositis vel suboppositis, 1-floris (in typo); pedunculis circiter 1 cm. longis, prope apicem bracteam rotundo-cordatam foliaceam gerentibus, circ. 2 cm. longis; florum pedicellis circ. 6–8 cm. longis, gracillimis, leviter pubescentibus, ad medium quorum est bractea squamiformis circ. 1 mm. longa; sepalis 3, ovato-triangularibus, 3 mm. longis latisque, crassis, extus pubescentibus, intus lepidote glabratis; petalis 6, linearibus vel lineari-lanceolatis, 13 mm. longis, basi 3–4 mm. latis, apice inflexis et obtuse acuminatis, crassis, valvatis, extus pubescentibus, intus lepidote glabratis, basi marginibus vulgo revolutis, staminibus subpeltatis, 1–1.2 cm. longis; ovariis pilosissimis, 7-carpellatis; stylis brevibus; stigmatibus subclavato-capitatis, setaceo-pubescentibus, 2 mm. latis; fructibus ignotis.—BOCAS



DEL TORO: vicinity of Bocas del Toro, alt. near sea-level, Aug. 1, 1940, *H. Wedel 279* (Herb. Missouri Bot. Gard., TYPE).

This species is evidently closely related to *D. microcarpa* R. W. Fries, from which it can be distinguished by the gradually acuminate apex of the leaves, the larger foliaceous bracts, the longer pedicels, and the narrow bluntly acuminate petals, densely pubescent without. The leaves are almost perfectly elliptic, entirely glabrous on both surfaces. The short peduncle bears a large foliaceous bract, from which extends the slender pedicel. Midway up the pedicel is found a small squamiferous bract. The flowers are thick and leathery, densely pubescent without and lepidote-glabrous within. The ovary, style and stigma are densely hairy. The torus is cylindrical, truncate.

#### CUNONIACEAE

*WEINMANNIA pseudolaurina* Woodson, spec. nov. Arbor ut dicitur ca. 8 m. alta; ramulis juventate conspicue compressis minute sparseque pilosulis tandem teretibus glabris. Folia simplicia breviter petiolata late elliptica apice obtusa vel late acuta basi obtusa margine levissime crenata petiolo ca. 0.2–0.4 cm. longo incluso 5–10 cm. longa coriacea nitida subtus nervo medio rare inconspicue pilosulo caeterumque glaberrima. Inflorescentiae fasciculatae ca. 8 cm. longae, axibus minute puberulis. Flores in fasciculis inter se 0.2–0.5 cm. distantibus aggregati; pedicellis 0.2–0.3 cm. longis puberulis. Sepala 5 ovato-lanceolata acuminata ca. 0.1 cm. longa apice minute barbata. Petala ignota. Stamina 10; filamentis anguste subuliformibus ca. 0.2 cm. longis glabris. Ovarium ovoideum ca. 0.1 cm. longum pilosum. Folliculi ca. 0.3 cm. longi dense pilosuli; seminibus late oblongoideis rufis ca. 0.1 cm. longis pilosis.—PANAMÁ: Cerro Campana, trail from Campana to Chica, alt. 600–800 m., Aug. 10, 1941, very common along edges of grassland, *P. H. Allen 2656* (Herb. Missouri Bot. Gard., TYPE).

*Weinmannia laurina* H.B.K., to which our species is closely related, bears glabrous ovaries and follicles, more lax, elongate inflorescences, and more sharply crenate-serrulate leaves.



## CONNARACEAE

*(J. A. Steyermark, Chicago)*

**CONNARUS Allenii** Steyermark, sp. nov. Folia 3-5-foliolata, foliolis oblanceolatis subito breviter acuminatis, basi angustato-cuneatis, chartaceis, utrinque glabris, nervis lateralibus utroque latere 10-15 fere rectis; inflorescentia lateralis subracemosa, rhachidi 1.8-2 cm. longa, floribus breviter pedicellatis; sepala 2.5 mm. longa subobtusata extus in statu fructifero glabra epunctata; petala 4-4.5 mm. longa lanceolata utrinque glabra epunctata; folliculi 2.3-2.5 cm. longi lateraliter compressi oblique mucronati, basi 5 mm. longe stipitati, pericarpio intus tomentosus.

Tree 6 m. tall, bark of branches light gray, glabrous; leaves 3-5-foliolate, rachis 7-12 cm. long, glabrous; leaflets 8-18 cm. long, 2.2-3.5 cm. broad, oblanceolate, abruptly short-acuminate at apex, narrowed-cuneate at base, chartaceous, dull above, glabrous on both sides; petiolule 2-2.5 mm. long; secondary (lateral) nerves 10-15 on each side, divergent, more or less straight; inflorescence lateral, subracemose, rachis smooth, short, 1.8-2 cm. long; flowers short-pedicellate; sepals 2.5 mm. long, 1-1.25 mm. broad, subobtusate, glabrous (in fruit) on outside, not punctate; petals 4-4.5 mm. long, 1 mm. broad, lanceolate, glabrous on both sides, epunctate; follicle 2.3-2.5 cm. long, 1.5 cm. broad, laterally compressed, obliquely mucronate, stipitate at the base, 5 mm. long; pericarp subligneous, dull orange-brown, glabrous outside, finely lineolate, tomentose within; seed 1.3 cm. long, 0.8 cm. thick, laterally compressed, testa black, shining.—DARIEN: tree 6 m. tall, fruit orange; trail between Pinogana and Yavisa, ca. 15 m., March 17, 1937, *Allen 249* (U. S. Nat. Herb., TYPE, fragment of type in Herb. Field Mus.).

*Connarus Allenii* is distinct in its narrowly oblanceolate 5-foliolate elongated leaflets and short lateral rachises of the inflorescence. It is related to *C. Turzaninowii*, which differs in its smaller oval leaflets, and to *C. punctatus*, which has the fruit subglabrous instead of tomentose within and broader leaflets.



## OXALIDACEAE

**OXALIS coccinea** Woodson & Schery, spec. nov. Suffruticosa ca. 4–5 dm. alta. Caulis basi 2–3 mm. crassus, lignosus brunneus, uno vel duobus ramis magnis basi ex quibus rami minores brevissimi pubescentibus cum pilis adscendentibus oriuntur. Folia inaequilateraliter alternata trifoliolata petiolata. Foliolae facie superiore subglabrae (pilosae juventute), facie inferiore plus minusve dense adpresse pilosae et subglaucoideae; foliola media elliptico-lanceolata, ovato-lanceolata vel elliptica, 15–28 mm. longa, 7–13 mm. lata, apice emarginata vel obtusa, margine paulo undulato, petiolulo 4–5 mm. longo; foliolis lateralibus parvis subsessilibus inaequalibus apice emarginatis, 3–6 mm. longis, 2–4 mm. latis, petiolis plus minusve pubescentibus, 10–15 mm. longis, stipulis destitutis. Pedunculi axillares petiolis longiores, 15–20 mm. longi, pubescentes apice subumbellati; pedicellis brevibus 1–2 mm. longis coccineis pilosis. Sepala coccinea, 4 mm. longa, basi 1 mm. lata, exteriora lanceolata pubescentia. Petala aureo-lutea, ca. 8 mm. longa. Filamenta maiora infra medium appendiculata supra appendicem pubescentia. Styli glabri. Capsula ignota.—BOCAS DEL TORO: near Nievécita, alt. 50 m., Aug. 1940, *Woodson & Schery 1029* (Herb. Missouri Bot. Gard., TYPE).

This species is close to *O. Neaei* DC. but has a more tenuous, less robust habit. The buds and calyces are slightly smaller and tinged a deep red. The young stems and leaflets are also tinged deep red, this being apparent even in the dry plant. The older leaflets are glabrous on the upper surface. The fibrous root system is stout.

## RUTACEAE

(*C. L. Lundell, Ann Arbor, Mich.*)

**ZANTHOXYLUM Scheryi** Lundell, sp. nov. Arbor parva, ramulis crassis, angulatis. Folia imparipinnata; foliola 7 vel 9, petiolulis 5–9 mm. longis; lamina subcoriacea, integra, oblongo-elliptica vel elliptica, 3–7.5 cm. longa, 1.9–4 cm. lata, apice obtusa et emarginata, basi acuta. Inflorescentiae parce puberulae, cymoso-paniculatae, axillares, usque ad 15 cm.



longae. Pedicelli 2.5–3 mm. longi. Sepala 5. Petala 5, glabra, lanceolato-oblonga, 3 mm. longa. Filamenta 2–2.5 mm. longa.

A tree, 6 m. high, branchlets stout, angled, very minutely and sparsely puberulent, essentially glabrous. Leaves odd-pinnate, the petiole up to 6 cm. long, the rachis up to 13 cm. long, the petiole and rachis canaliculate. Leaflets 7 or 9; petiolules canaliculate, 5–9 mm. long; leaf blades subcoriaceous, oblong-elliptic or elliptic, 3–7.5 cm. long, 1.9–4 cm. wide, apex abruptly narrowed, obtuse and emarginate, base acute, decurrent, sparsely puberulent above along the impressed costa, glabrous otherwise, margin entire, paler beneath, costa prominent on under surface, primary lateral veins slender and inconspicuous, 12–14 on each side. Inflorescences cymose-paniculate, axillary, solitary, up to 15 cm. long, including peduncle 9 cm. long, minutely and sparsely puberulent; bracts small, deciduous. Pedicels 2.5–3 mm. long, puberulent. Flowers green-yellow, usually 5-parted. Sepals triangular-ovate, about 0.7 mm. long, acute. Petals glabrous, lanceolate-oblong, 3 mm. long, obtuse and usually emarginate. Filaments 2–2.5 mm. long. Rudimentary pistils usually 5.—CHIRIQUÍ: Potrero Muleto to summit, Volcan de Chiriquí, alt. 3500–4000 m., July 13–15, 1940, *Woodson & Schery 451* (Herb. Univ. Michigan, TYPE).

This remarkable species has affinity to *Z. chiriquinum* Standl. The entire elliptic or oblong-elliptic leaflets and the puberulent panicles up to 15 cm. long are characteristics by which *Z. Scheryi* may be readily separated.

POLYGALACEAE

(*S. F. Blake, Washington, D. C.*)

POLYGALA FENDLERI Chod. var. HETEROTHRIX Blake.—COCLÉ: between Las Margaritas and El Valle, 1938, *Woodson, Allen & Seibert 1261* (U. S. Nat. Herb.); CHIRIQUÍ: common weed at 800 m., vicinity of El Valle de Antón, alt. 600 m., *Allen 1933* (U. S. Nat. Herb.). Previously known only from Colombia.

POLYGALA GALIODES Poir.—COCLÉ: on open llanos, Llano Bonito, north of Las Margaritas, alt. 400–500 m., July 26, 1935, *Seibert 523* (U. S. Nat. Herb.); vicinity of El Valle, alt. 100–800 m., Sept. 5, 1938, *Allen 773* (U. S. Nat. Herb.); CHIRIQUÍ: vi-



cinity of El Valle de Antón, alt. 600 m., *Allen 1932* (U. S. Nat. Herb.). Not previously known north of Colombia, although erroneously recorded by Hemsley from Mexico and Guatemala.

## CELASTRACEAE

(*C. L. Lundell, Ann Arbor, Michigan*)

MAYTENUS WOODSONI Lundell, *Ann. Missouri Bot. Gard.* **26**: 291. *pl.* 22. 1939 (*Salacia blepharodes* Pittier, *Contr. U. S. Nat. Herb.* **18**: 159. 1916, not *Maytenus blepharodes* Lundell; *Maytenus vulcanicola* Standl., *Field Mus. Publ. Bot.* **22**: 153. 1940).—CHIRIQUÍ: a tree, 2–4 m. high, around El Potrero Camp, Volcan de Chiriquí, at edge of forest, alt. 2800–3000 m., March 10–13, 1911, *H. Pittier 3086* (U. S. Nat. Herb., No. 677476, TYPE of *Salacia blepharodes*); a tree, 3 m. high, Loma Larga to summit, Volcan de Chiriquí, alt. 2500–3380 m., July 4–6, 1938, *Woodson, Allen & Seibert 1065* (Herb. Univ. Michigan, TYPE of *M. Woodsoni*); a tree, 3 m. high, flowers maroon, same locality and date, *Woodson, Allen & Seibert 1088*; near summit, Volcan de Chiriquí, alt. about 3700 m., Feb. 12, 1940, *M. E. Terry 1309* (Field Mus. Herb., TYPE of *Maytenus vulcanicola*); a tree, 4 m. high, flowers maroon, Potrero Muleto to summit, Volcan de Chiriquí, alt. 3500–4000 m., July 13–15, 1940, *Woodson & Schery 398*; a small tree, 6 m. high; same locality and date, *Woodson & Schery 440*.

The types of *Salacia blepharodes* and *Maytenus vulcanicola* do not differ from the type of *M. Woodsoni*.

## VITACEAE

CISSUS BREVIPES Morton & Standl.—COCLÉ: north rim of El Valle de Antón, near Cerro Turega, alt. 650–700 m., June 30, 1940, *Woodson & Schery 182*. Previously known from the type locality in Costa Rica.

## LOASACEAE

KLAPROTHIA MENTZELIODES HBK.—CHIRIQUÍ: vicinity of Bajo Chorro, alt. 1900 m., July 20–22, 1940, *Woodson & Schery 650*. New to Panama, known previously from South America and Costa Rica.



## BEGONIACEAE

*(L. B. Smith & B. G. Schubert, Cambridge, Mass.)*

*BEGONIA VESTITA* C. DC.—CHIRIQUÍ: epiphytic, vicinity of Bajo Chorro, alt. 1900 m., July 20–22, 1940, *Woodson & Schery 621*. Previously known from Costa Rica.

## MELASTOMACEAE

*(H. A. Gleason, New York)*

*CENTRONIA PHLOMOIDES* Triana—CHIRIQUÍ: vicinity of Bajo Chorro, alt. 1900 m., July 21, 1940, *Woodson & Schery 657*. Previously known only from Costa Rica.

*CLIDEMIA SETOSA* (Triana) Gleason—COCLÉ: north rim of El Valle, near Cerro Turega, alt. 650–700 m., June 30, 1940, *Woodson & Schery 200*. Previously known from Vera Cruz to Costa Rica.

*MICONIA OINOCHROPHYLLA* Donn. Sm.—COCLÉ: north rim of El Valle, near Cerro Turega, alt. 650–700 m., June 30, 1940, *Woodson & Schery 174*. Previously known from Guatemala, British Honduras, Honduras, and Colombia.

*MICONIA PITTIERI* Cogn.—CHIRIQUÍ: vicinity of Bajo Chorro, alt. 1900 m., July 20, 1940, *Woodson & Schery 630*. Previously known from Costa Rica.

*OSSAEA MICRANTHA* (Sw.) Macf.—CHIRIQUÍ: Quebrada Velo, alt. ca. 1700 m., July 8, 1940, *Woodson & Schery 267*. Guatemala to Peru and the West Indies, but apparently new to Panama.

There are five species of *Blakea* in Costa Rica and Panama which are apparently closely related to each other while distinctly different from the other species of the genus from the same regions. They belong to the section *Pyxidanthus*, in which the thick leathery bracts are connate for nearly or quite their whole length into two cups, which are scarcely different in length and from which the calyx barely protrudes; the leaves are coriaceous and the flowers unusually large. Another feature of all five is the character of the pubescence. This may be abundantly developed or confined to the leaf-buds alone; it consists of conic many-celled hairs closely aggregated into a



velvety indument, from which project other similar hairs of much larger size, up to 2 mm. long. The differences between them may be summarized in a brief key:

Petals coarsely tuberculate; anthers short-spurred at the base.

Sepals tipped with a reflexed foliaceous appendage; leaf-blades about twice as long as wide.....*B. calycosa* Gl.

Sepals unappendaged; leaf-blades cordate at base, about as wide as long.....*B. tuberculata* Donn. Sm.

Petals not tuberculate; anthers rounded at the base.

Younger parts, except the leaf-buds, glabrous or nearly so; leaf-blades 5-nerved, with an additional marginal pair.

Leaf-blades rounded at the base, the secondary veins spreading at right angles; hypanthium and calyx together 15–18 mm. long.....

.....*B. intercepta* sp. nov.<sup>1</sup>

Leaf-blades cuneate at the base, the secondary veins spreading at an angle of 70°; hypanthium and calyx together 20–25 mm. long.....*B. Woodsoni* Gl.

Young stems, petioles, leaf-veins beneath, peduncles, bracts, and sepals densely pubescent; leaves 5-nerved with an additional marginal pair.....

.....*B. brunnea* sp. nov.

**BLAKEA brunnea** Gleason, sp. nov. Arbor; rami subteretes, petioli, venae subtus, pedunculi, bracteae, et sepala dense brunneo-velutini. Petioli validi 3–6 cm. longi. Laminae subcoriaceae, ellipticae, usque 20 cm. longae 12 cm. latae, apice breviter apiculatae, basi late rotundatae, supra glabrae opacae venis impressis, subtus brunneae, 5-nerviae jugo marginali neglecto, venis dense pubescentibus valde elevatis, venulis tenuiter pubescentibus sub angulo fere recto divergentibus. Pedunculi solitarii crassissimi 15–20 mm. longi. Bracteae toto connatae, involucram subcylindricam 25 mm. longam formantes. Flores 6-meri. Hypanthium glabrum. Calyx breviter 6-lobatus, extra pubescens. Petala staminaque matura non visa. Antherae dolabriformes 7 mm. longae. Stylus 3 cm.

<sup>1</sup> **BLAKEA intercepta** Gleason, sp. nov. Arbor parva; rami vix cogniti ut videtur ancipites fere glabri. Petioli subglabri 3–4 cm. longi. Laminae ellipticae, usque 20 cm. longae 11 cm. latae, obtusae, apiculatae, basi late acutae, 5-nerviae, jugo marginali neglecto, utrinque fere glabrae, venis lateralibus sub angulo fere recto divergentibus. Inflorescentia floresque ignoti. Bracteae connatae hypanthium amplectentes. Hypanthium glabrum circa 10 mm. longum. Calyx glaber circa 6 mm. longus, indistincte lobatus.

Type collected in Costa Rica by Otto Kuntze, June 20, 1874, and labeled in Kuntze's hand "*Blakea multiflora* Don. *Topobea* Triana."



longus glaber attenuatus.—CHIRIQUÍ: vicinity of Bajo Chorro, alt. 1900 m., July 20–22, 1940, *Woodson & Schery 615* (Herb. New York Bot. Gard., TYPE).

*CONOSTEGIA chiriquensis* Gleason, sp. nov. Arbor glaberrima, ut videtur parva, ramis crassis rotunde 4-angulatis cicatricibus foliorum rotundis notatis. Petioli gracili, usque 3 cm. longi. Laminae subcoriaceae, ellipticae, usque 12 cm. longae 6 cm. latae, abrupte breviterque caudato-acuminatae, remote denticulatae, basi abrupte cuneatae, 3-nerviae vel vix 3-pli-nerviae, jugo marginali neglecto, venis secundariis sub angulo 70° divergentibus supra obsoletis. Panicula circa 1 dm. longa, a basi ramosa, pedicellis 3–5 mm. longis. Alabastra 9–10 mm. longa in specimine typico, in altero usque 14 mm., abrupte acuminata in rostrum crasse subulatum 2 mm. longum. Hypanthium late poculiforme, 4 mm. longum. Petala late rhomboidea, alba, 12 mm. longa, valde asymmetrica, latere uno in lobum triangularem producto, altero rotundato. Antherae oblongae, obtusae, 2-loculares, 2.8 mm. longae; connectivum dorso proper basin tumidum. Ovarium 6-loculare, fere toto inferum, truncato-conicum; stylus crassus, 4.4 mm. longus; stigma hemisphaericum, 1.5 mm. latum.—CHIRIQUÍ: vicinity of Finca Lérica, alt. 1750 m., July 11, 1940, *Woodson & Schery 376* (Herb. New York Bot. Gard., TYPE); vicinity of Callejon Seco, Volcan de Chiriquí, alt. 1700 m., July 17, 1940, *Woodson & Schery 479* (Herb. New York Bot. Gard., COTYPE).

The closest relatives of *C. chiriquensis* are two Costa Rican species, *C. rhodopetala* Donn. Sm., with more sharply angled branches, longer shining leaves with the secondary veins spreading at right angles, and much smaller petals, and *C. Pittierii* Cogn., with smaller, thinner, proportionately wider, distinctly 3-pli-nerved leaves.

*MERIANIA* (§ *DAVYA*) *panamensis* Gleason, sp. nov. Arbor glaberrima 20 m. alta, ramis junioribus subteretibus ad nodos paullo incrassatis. Petioli atropurpurei 25–40 mm. longi. Laminae chartaceae, ovato-ellipticae, usque 13 cm. longae 7 cm. latae, in cuspem brevem obtusam rotundatae, integrae,



basi late cuneatae, 5-nerviae, venulis creberrime reticulatis. Panicula magna ramosa multiflora; flores 5-meri breviter (5 mm.) pedicellati ad apicem ramulorum. Hypanthium late poculiforme 6.5 mm. latum. Calyx patulus, 3.5–4 mm. latus, limbo vix 5-lobato. Petala late et inaequilateraliter cuneato-obovata, 3 cm. longa. Stamina episepala: filamenta 17 cm. longa; antherae crasse subulatae, arcuatae, 7 mm. longae; connectivum non appendiculatum, supra basin tumidum. Stamina epipetala: filamenta 12 mm. longa; antherae graciliter subulatae, valde arcuatae, 12–13 mm. longae; connectivum ad basin productum in appendicem dorsalem linearem apice dilatam 4 mm. longam. Ovarium superum; stylus gracilis, 13 mm. longus; stigma punctiforme.—CHIRIQUÍ: Casita Alta to Cerro Copete, Volcan de Chiriquí, alt. 2300–3300 m., July 10, 1940, *Woodson & Schery 361* (Herb. New York Bot. Gard., TYPE).

## ARALIACEAE

(*A. C. Smith, Jamaica Plain*)

*SCHEFFLERA epiphytica* A. C. Smith, sp. nov. Frutex epiphyticus circiter 2 m. altus ubique inflorescentia excepta glaber, ramulis crassis subteretibus pallidis striatis; foliis simplicibus, petiolis crassis ad 15 mm. longis, inferne late alatis, superne subteretibus et leviter canaliculatis, medium versus ligula coriacea oblongo-lineari ad 20 mm. longa persistente ornatis; laminis chartaceis siccitate viridi-olivaceis elliptico-oblongis, 18–23 cm. longis, 9–11 cm. latis, basi leviter cordatis vel rotundatis, apice abrupte acuminatis (acumine ad 8 cm. longo acuto), margine integris et saepe leviter revolutis, costa utrinque prominente, nervis secundariis utrinsecus 12–16 subpatentibus marginem versus anastomosantibus supra paullo subtus valde prominulis, venulis saepe utrinque prominulis; inflorescentia composito-paniculata, rhachi ramulisque gracilibus striatis mox glabris, pedunculo subnullo, rhachi 2–4 cm. longa, ramulis paucis ad 35 cm. longis (stipitibus ad 10 cm. longis inclusis) bracteis chartaceis oblongis acutis 22–30 mm. longis glabris subtentis; pedunculis numerosissimis patentibus gracilibus sub anthesi ad 9 mm. sub fructu ad 15 mm. longis



minute puberulis mox glabris; floribus 5–8 per umbellam, pedicellis gracilibus primo puberulis sub anthesi ad 3 mm. sub fructu ad 6 mm. longis, bracteis basi pedicellorum membranaceis acutis deltoideis circiter 0.7 mm. longis; calyce levi obconico sub anthesi 1–1.5 mm. longo et circiter 2 mm. diametro, limbo minuto membranaceo, lobis nullis vel obscure apiculatis; petalis membranaceis glabris in calyptram mox caducam connatis, calyptra semiglobosa circiter 2 mm. longa et 2.5 mm. diametro, apice obtuse umbonata, conspicue reticulato-nerata; staminibus 5, filamentis gracilibus 0.4–0.7 mm. longis, antheris deltoideo-ovoideis circiter 1.5 mm. longis, basi subcordatis, apice obtusis, stylis 5 in columnam carnosam conicam cohaerentibus, apice minute liberis, loculis et ovulis 5; fructibus subglobosis ad 3.5 mm. diametro conspicue 5-costatis disco et styliorum columna coronatis.—COCLÉ: epiphytic shrub 2 m. tall, flowers white; hills north of El Valle de Antón, vicinity of La Mesa, alt. 1000 m., Jan. 21, 1941, *Allen 2344* (U. S. Nat. Herb., Nos. 1,806,122 and 1,806,123, TYPE); same locality, *Allen 2723* (Arn. Arb.).

This remarkable plant is at once distinguished from other American species of *Schefflera* by its simple leaves; to the best of my knowledge only two Old World species of the genus with simple leaves are known. The plant is certainly a member of the genus *Schefflera* (*nomen conservandum propositum*; see A. C. Smith, in *Trop. Woods* 66: 5. 1941), agreeing in such unmistakable characters as the conspicuous petiolar ligules, the paniculately umbelliferous inflorescences, and the calyptrate petals. Since both simple and compound leaves are found in such genera as *Oreopanax* and *Didymopanax*, the discovery of a simple-leaved American species of *Schefflera* is not entirely surprising.

#### VACCINIACEAE

(A. C. Smith, Jamaica Plain, Mass.)

Recent collectors in Panama have obtained several plants of the tribe Thibaudieae of unusual interest; in the present paper eight species and one genus are proposed as new, while five others are reported from Panama for the first time. The



collectors whose plants are cited are Paul H. Allen, M. E. Davidson, C. and W. von Hagen, and R. E. Woodson and R. W. Schery. Their plants have been seen in the following herbaria: Arnold Arboretum (A); Missouri Botanical Garden (Mo); New York Botanical Garden (NY); U. S. National Herbarium (US); the parenthetical letters indicate the place of deposit.

*MACLEANIA epiphytica* sp. nov. Frutex epiphyticus 1 m. altus ubique praeter corollae lobas glaber, ramulis cinereis teretibus gracilibus; petiolis rugosis crassis 4–6 mm. longis; laminis coriaceis siccitate olivaceis oblongo-ellipticis, 5–8 cm. longis, 2–3 cm. latis, basi rotundatis vel late obtusis, apice obtusis, margine integris et incrassatis, 5-plex-nerviis, nervis prope basim orientibus supra subplanis vel prominulis subtus leviter elevatis, costa subtus subprominente, rete venularum utrinque inconspicue prominulo; inflorescentiis apicem ramulorum versus axillaribus fasciculatis vel obscure racemosis 2–4-floris, floribus bracteis minutis subtentis; pedicellis crassis 6–11 mm. longis, apicem versus leviter incrassatis, paulo supra medium bracteolis papyraceis ovato-deltaideis acutis circiter 1.5 mm. longis et latis bibracteolatis; calycis tubo obprismatico sub anthesi circiter 3.5 mm. longo obscure 5-angulato, limbo suberecto lobis late deltaideis acutis circiter 1 mm. longis et 2.5 mm. latis inclusis circiter 2 mm. longo, sinibus rotundatis; corolla tenuiter carnosae cylindrica sub anthesi 17–18 mm. longa et basim versus circiter 5 mm. diametro, apicem versus contracta, lobis 5 deltaideis subacutis circiter 1.5 mm. longis intus albo-puberulis; staminibus 10, filamentis membranaceis liberis ligulatis circiter 3 mm. longis, antherarum loculis 4–4.5 mm. longis, tubulo unico rigido circiter 3 mm. longo rima ovali 2–2.5 mm. longa dehiscente; stylo corollam subaequante, stigmate inconspicuo.—COCLÉ: epiphytic shrub 1 m. high; corolla scarlet, tipped with green; hills north of El Valle de Antón, alt. 1000 m., June 23, 1940, *Allen 2171* (A, TYPE).

*Macleania epiphytica*, related to those species of the genus with a single anther-tubule and glabrous corollas, sharply differs from them in having its filaments separate rather than connate in a tube. In foliage, the new species suggests *M. com-*



*pacta* A. C. Smith and *M. insignis* Mart. & Gal., but it has larger flowers than the former and smaller flowers than the latter.

**PSAMMISIA panamensis** sp. nov. Frutex epiphyticus ad 50 cm. altus ubique praeter florum filamentas glaber, ramulis crassis fuscis apicem versus conspicue complanatis; petiolis rugosis crassis (circiter 3 mm. diametro) subteretibus 8–10 mm. longis; laminis tenuiter coriaceis siccitate fuscis oblongo-lanceolatis, 26–34 cm. longis, 5.5–7.5 cm. latis, basi subattenuatis, apice gradatim acuminatis, margine integris et anguste revolutis, pinnatinerviis, costa supra elevata subtus prominente, nervis secundariis utrinsecus 8–10 supra prominulis subtus acute elevatis marginem versus conspicue anastomosantibus, inferioribus adscendentibus superioribus patentibus, rete venularum utrinque prominulo; inflorescentiis axillaribus breviter racemosis sub anthesi ut videtur 6–8-floris, pedunculo subnullo, rhachi 6–10 mm. longa angulata, pedicellis crassis 8–12 mm. longis bracteis papyraceis ovatis subacutis circiter 1.5 mm. longis subtentis, basim versus bracteolis ut bracteis similibus bibracteolatis, apicem versus paullo incrassatis; calyce late campanulato sub anthesi 7–8 mm. longo, tubo 4–5 mm. longo et summo 5–7 mm. diametro, limbo tenuiter coriaceo suberecto circiter 3 mm. longo, lobis 5 deltoideis acutis circiter 2 mm. longis et 3 mm. latis; corolla tenuiter carnosae (basim versus tenuiore) truncato-conica sub anthesi 6–7 mm. longa et basi circiter 5 mm. diametro, apicem versus contracta, lobis 5 deltoideis subacutis circiter 1 mm. longis et latis; staminibus 10, filamentis submembranaceis ligulatis 1.5–2 mm. longis, margine puberulente-ciliolatis, apicem versus angustatis, connectivis angustis alternatis obscure bicalcaratis vel interdum ecalcaratis, antheris rigidis 3.5–4 mm. longis, loculis basi conspicue incurvatis, tubulis cylindrico-conicis circiter 1.5 mm. longis rimis elongatis ovalibus dehiscentibus; stylo corollam subaequante, stigmatate inconspicuo.—COCLÉ: epiphytic shrub 50 cm. high; hills north of El Valle de Antón, alt. 1000 m., June 23, 1940, *Allen 2152* (A, TYPE).

*Psammisia panamensis* is the second species of the genus thus far known from North America, but it is not of the rela-



tionship of *P. ramiflora* Kl. of Costa Rica and Panama. The new species appears to be closely related only to the Peruvian *P. globosa* A. C. Smith, the two being essentially identical in foliage. *Psammisia panamensis*, however, in comparison with its ally, has a substantially larger calyx with conspicuous lobes, a larger and conical (rather than subglobose) corolla, and obviously larger stamens with less conspicuous and essentially unspurred connectives.

*THIBAUDIA COSTARICENSIS* Hoer. Bot. Jahrb. **42**: 311. 1909; A. C. Smith, Contr. U. S. Nat. Herb. **28**: 425. 1932.—CHIRIQUÍ: tree to 10 m. high, common in rain-forest; corollas pink and white; Boquete Region, Cerro Horquete, alt. about 2000 m., *von Hagen 2023* (A, NY); epiphytic shrub in rain-forest; calyx rose; corolla white; Boquete Region, Bajo Chorro, alt. about 1800 m., *Davidson 380* (A).

The species has previously been known only from Costa Rica, elevations up to 1600 m. only having been reported.

**ANTHOPTEROPSIS** A. C. Smith, gen. nov.

Frutices, foliis breviter petiolatis, laminis subcoriaceis; inflorescentiis terminalibus vel axillaribus breviter racemosis, floribus pedicellatis bracteis subtentis; calyce cum pedicello articulato alis 5 conspicuis e basi ad apicem adscendentibus lobis alternatis praedito, dentibus 5 inconspicuis; corolla carnosae cylindricae 5-lobatae; staminibus 10 aequilongis, filamentis membranaceis, antheris basim versus dorsifixis, loculis leviter granulatis basi paullo incurvatis, connectivis angustatis alternatim summo loculorum calcare mediano unicalcaratis, tubulis 2 ad basim distinctis flexibilibus per rimas ovaes introrsas elongatas dehiscentibus; ovario in calyce immerso disco annulari complanato coronato, loculis 5, placentis magnis, ovulis numerosis, stylo filiformi corollam subaequante, stigmate minute subcapitato.

*ANTHOPTEROPSIS insignis* sp. nov. Frutex ad 4 m. altus ubique praeter inflorescentiae partes et ramulos juveniles inconspicue puberulos glaber, ramis ramulisque teretibus cinereis gracilibus leviter rimosis juventute fuscis angulatis;



petiolis paullo incrassatis supra complanatis 2–3 mm. longis; laminis elliptico-oblongis, (3–)4–6 cm. longis, (1.5–)2–3 cm. latis, basi anguste rotundatis, apice obtusis vel obtuse cuspidatis, margine integris et anguste recurvatis, 5-plex-nerviis, nervis paullo supra basim orientibus adscendentibus utrinque valde prominulis, costa subtus valde elevata, rete venularum utrinque leviter prominulo; inflorescentiis terminalibus vel raro apicem ramulorum versus axillaribus, 5–12-floris, floribus bracteis papyraceis deltoideis circiter 1.5 mm. longis subacutis inconspicue ciliolatis subtentis, rhachi subtereti ad 1 cm. longa; pedicellis subteretibus rugulosis crassis 15–20 mm. longis superne gradatim incrassatis et saepe inconspicue puberulis, medium versus bracteolis ut bracteis sed circiter 1 mm. longis bibracteolatis; calyce carnosio subgloboso sub anthesi alis inclusis 8–10 mm. diametro, tubo limbum longitudine subaequante, limbo erecto, dentibus minute apiculatis, alis carnososis (vel siccitate submembranaceis) 2–3 mm. latis, apicibus alarum dentes 1 mm. excedentibus; corolla sub anthesi 16–19 mm. longa et 4–5 mm. diametro, inconspicue 5-angulata, superne pilis fuscis debilibus circiter 0.3 mm. longis parce pilosa demum glabrescente, lobis deltoideis apiculatis circiter 1 mm. longis et 2–2.5 mm. latis, sinibus acutis; staminibus circiter 9 mm. longis, filamentis distinctis basim corollae saepe cohaerentibus pallidis ligulatis circiter 3 mm. longis et basi 1.3 mm. latis, superne dorso pallide hirsutis, antheris circiter 7 mm. longis, loculis 4–5 mm. longis, connectivis pallidis, calcare circiter 0.5 mm. longo, tubulis quam loculis paullo angustioribus acutis.—COCLÉ: large straggling shrub 4 m. high, the stem 15 cm. in diameter, calyx fleshy, pink, corolla yellow; hills south of El Valle de Antón, alt. about 700 m., May 9, 1941, *Allen 2500* (A, TYPE, Mo).

This specimen, one of many remarkable plants collected in Coelé by Mr. Allen, is not readily placed in any existing genus. At first glance (as indicated by my generic name) it suggests *Anthopterus* Hook., but closer examination indicates that it differs in many essential features. Other genera showing certain points of relationship are *Thibaudia* R. & P., *Macleania*



	<i>Macleania</i>	<i>Psammisia</i>	<i>Anthopterus</i>	<i>Thibaudia</i>	<i>Anthopteropsis</i>
Calyx:	Articulate with pedicel; sometimes winged to sinuses (wings in <i>M. pentaptera</i> Hoer. exceeding the inconspicuous lobes).	Articulate with pedicel; not winged.	Continuous with pedicel; winged to sinuses, but with obvious lobes exceeding the wings.	Usually articulate with pedicel; rarely narrowly winged to sinuses.	Articulate with pedicel; conspicuously winged to sinuses, the wings produced distally and exceeding the inconspicuous lobes.
Corolla:	Tubular or urceolate.	Tubular or urceolate.	Conspicuously winged.	Tubular.	Tubular.
Anthers:	Locules strongly granular; spurs lacking; tubules rigid.	Locules strongly granular; spurs present (but lateral at apex of connective, not median); tubules rigid.	Locules finely granular; spurs lacking; tubules flexible.	Locules finely granular; spurs lacking (vestigial in <i>T. cupatensis</i> Huber); tubules flexible.	Locules finely granular; spurs present on alternate connectives, dorsal, median; tubules flexible.



Hook., and *Psammisia* Kl. The accompanying table summarizes the more important points of difference among these genera, as regards their relationship to *Anthopteropsis*.

From this summary it is perceived that *Anthopteropsis* has some essential characters in common with each of the mentioned genera. Its calyx is faintly suggestive of that of *Macleania pentaptera* Hoer., but staminal characters definitely remove it from that genus. The spurs of the connectives of *Psammisia* are of quite a different type from those of the new genus, and in many other respects *Psammisia* may be excluded as a close relative. The conspicuously winged corollas of *Anthopterus* amply differentiate that genus. The species of *Thibaudia* have no suggestion of accentuated calyx-wings, and the vestigial connective-spurs of *T. cupatensis* Huber are hardly of the same type as the spurs of *Anthopteropsis*. Nevertheless, *Thibaudia* may be the closest ally of the new genus. I have already discussed (in Bull. Torrey Bot. Club **63**: 316. 1936) the several elements which have in the past been referred to *Thibaudia*, and it hardly seems advisable to expand that generic concept further by dubious inclusion of the present plant.

**CAVENDISHIA gaultherioides** sp. nov. Frutex epiphyticus ad 1 m. altus ubique glaber, ramulis gracilibus subteretibus cinereis vel purpurascens; foliorum laminis subsessilibus (petiolis crassis ad 3 mm. longis et diametro) chartaceis vel tenuiter coriaceis siccitate fusco-olivaceis bullatis ovatis vel suborbicularibus, 5–12 cm. longis, 4–10 cm. latis, basi rotundatis vel leviter cordatis, apice obtusis vel rotundatis, margine integris et anguste revolutis, pinnatinerviis, costa supra basim versus elevata subtus prominente, nervis secundariis utrinsecus 5–10 inferioribus adscendentibus superioribus brevibus patentibus, omnino supra in sulcis prominulis subtus prominentibus marginem versus nervo marginali conjunctis, rete venularum utrinque leviter prominulo; inflorescentiis axillaribus congestis breviter racemosis basi bracteis deciduis suffultis, rhachi crassa (1.5–2 mm. diametro) sub anthesi ad 2 cm. longa 5–12 flora; bracteis floriferis papyraceis concavis ellip-



tico-oblongis vel suborbicularibus 6–10 mm. longis et latis, basi paullo angustatis, apice acutis vel rotundatis, conspicue et copiose flabellato-nerviis (nervis utrinque prominulis), margine saepe minute glanduloso-ciliolatis; pedicellis inconspicuis crassis circiter 1 mm. longis bibracteolatis, bracteolis ut bracteis sed angustioribus vel interdum reductis; calyce campanulato circiter 6 mm. longo, tubo circiter 2 mm. longo et 3–4 mm. diametro, limbo erecto-patente summo 4–5 mm. diametro conspicue nervato, lobis 5 ovato-deltaideis, circiter 1.5 mm. longis et 2–3 mm. latis, apice apiculatis, margine glanduloso-ciliolatis, basi saepe minute imbricatis, sinibus acutis; corolla tenuiter carnosa cylindrica 7–10 mm. longa, 3–4.5 mm. diametro, supra medium interdum inconspicue glandulosa, lobis 5 oblongo-deltaideis acutis; staminibus 10 subaequalibus, filamentis membranaceis ligulatis alternatim 2–2.5 mm. et 3–4 mm. longis, antheris alternatim circiter 6 mm. et 5 mm. longis, tubulis quam loculis circiter duplo longioribus; stylo gracili corollam subaequante, stigmatate irregulariter peltato.—COCLÉ: epiphytic shrub 50 cm. high, the bracts pink, the corollas white; hills north of El Valle de Antón, alt. 1000 m., *Allen 2170* (A); epiphytic shrub 1 m. high, the bracts shell-pink, the corollas greenish yellow; vicinity of La Mesa, north of El Valle de Antón, alt. 1000 m., April 12, 1941, *Allen 2375* (A, TYPE, Mo).

*Cavendishia gaultherioides* is a remarkably distinct species, characterized by its subsessile pinnate-nerved leaf-blades and its compact inflorescences with conspicuously nerved and often glandular-ciliolate bracts and bracteoles, subsessile flowers, and narrowly imbricate or at least contiguous calyx-lobes. Its only close relatives are *C. complectens* Hemsl. and *C. compacta* A. C. Smith; the former differs in its cordate-based amplexicaul leaf-blades, longer inflorescences, more numerous flowers, obvious pedicels, and its larger eglandular bracts; the latter differs in its larger pinnate-nerved caudate-acuminate petiolate leaf-blades, elongate inflorescences, large bracts, obviously pedicellate and larger flowers, etc.

CAVENDISHIA **Allenii** sp. nov. Frutex epiphyticus ad 1 m. altus ubique (corolla non visa forsan excepta) glaber, ramulis



subteretibus fusco-cinereis; foliorum laminis subsessilibus (petiolis incrassatis rugulosis 2–3 mm. longis) coriaceis siccitate fusco-olivaceis ovatis, 6.5–10 cm. longis, 4–7 cm. latis, basi rotundatis vel inconspicue subcordatis, apice obtusis vel subrotundatis, margine integris et valde recurvatis, 5-plinerviis, costa supra paullo elevata vel subplana subtus prominente nervis lateralibus utrinsecus 3–5 inconspicuis superne praedita, nervis secundariis e basi orientibus adscendentibus utrinque elevatis, venulis immersis; inflorescentiis axillaribus racemosis, rhachi angulata crassa (1.5–3 mm. diametro) 2.5–6 cm. longa multiflora, floribus congestis; bracteis floriferis papyraceis concavis ellipticis, 17–20 mm. longis, 10–15 mm. latis, apice acutis, margine integris, conspicue et copiose flabellato-nervatis (nervis utrinque prominulis); floribus subsessilibus, pedicellis inconspicuis ad 1 mm. longis bibracteolatis, bracteolis ut bracteis sed angustioribus et paullo brevioribus; calycis tubo post anthesin subgloboso levi 3–5 mm. diametro, limbo erecto papyraceo tubuloso lobis inclusis 7–8 mm. longo basi 2.5–3 mm. apice circiter 4 mm. diametro conspicue striato-nervato, lobis 5 oblongo-deltaideis 2–2.5 mm. longis et latis, apice apiculatis, margine interdum inconspicue glanduloso-ciliolatis, sinibus acutis; fructibus subglobosis ad 15 mm. diametro calycis limbo conspicuo coronatis, pericarpio tenui ut videtur submembranaceo, seminibus numerosis ovoideis circiter 1 mm. longis conspicue scrobiculatis.—COCLÉ: epiphytic shrub 1 m. high; fruit blue; along trail to Las Minas, north of El Valle de Antón, alt. 1000 m., May 10, 1941, *Allen 2471* (A, TYPE).

Although no corollas are available, the cited collection so obviously represents a new species that I venture to describe it. *Cavendishia Allenii* is at once distinguished by its subsessile leaves with rounded bases and obtuse apices, its subsessile flowers, and its papyraceous and conspicuously nerved bracts, bracteoles, and calyx limb, the latter being tubular and elongated. The mature fruit has a remarkably thin pericarp for the genus. The new species is suggestive of the preceding (*C. gaultherioides*) in its subsessile flowers and conspicuously



nerved bracts and bracteoles, but its calyces and foliage are so different that the close alliance of the two is dubious.

*CAVENDISHIA calycina* sp. nov. Frutex epiphyticus ubique glaber, ramulis gracilibus subteretibus cinereis; petiolis rugosis subteretibus crassis (ad 2 mm. diametro) 4–7 mm. longis; laminis coriaceis elliptico-oblongis, 7–11 cm. longis, 3–5 cm. latis, basi rotundatis vel late obtusis, apice acuminatis (acumine gracili ad 2 cm. longo acuto), margine integris et leviter recurvatis, subtus minute nigro-punctatis, 5- vel 7-plex-nerviis, nervis adscendentibus prope basim orientibus cum costa supra leviter impressis subtus prominentibus, exterioribus debilibus, rete venularum supra prominulo subtus subimmerso; inflorescentiis apicem ramulorum versus axillaribus breviter racemosis ut videtur 8–12-floris, rhachi circiter 3 mm. crassa et 10–12 mm. longa; bracteis floriferis papyraceis vel submembranaceis oblongo-ellipticis, 28–30 mm. longis, 16–18 mm. latis, apice rotundatis, margine integris; pedicellis crassis 4–5 mm. longis basim versus bracteolas 2 circiter 4 mm. longas gerentibus; calyce campanulato 7–8 mm. longo, tubo brevissimo circiter 4 mm. diametro, limbo erecto papyraceo lobis inclusis circiter 6 mm. longo, lobis 5 oblongis, 3–3.5 mm. longis, 2.5–3 mm. latis, apicem versus scariosis, apice calloso-apiculatis, margine leviter undulatis et saepe contiguis, sinibus acutis vel anguste rotundatis; corolla tenuiter carnosa cylindrica, sub anthesi 16–18 mm. longa et 3–4 mm. diametro, lobis parvis deltoideis subacutis; staminibus 10 subaequalibus quam corolla paullo brevioribus, filamentis chartaceis nigrescentibus ligulatis alternatim circiter 3 mm. et 5 mm. longis apicem versus obscure cinereo-pilosis, connectivis angustis nigrescentibus, antheris alternatim circiter 14 mm. et 12 mm. longis, tubulis quam loculis circiter duplo longioribus; stylo gracili corollam subaequante, stigmatate peltato.—CHIRIQUÍ: epiphyte, in rain-forest, corolla red, tipped with white; Boquete District, Bajo Chorro, alt. about 1800 m., Jan. 18, 1938, *Davidson 157* (A, TYPE).

Although the cited specimen bears only one disintegrated inflorescence and two flowers, the material is quite adequate to in-



dicate that a very distinct new species is represented. While the calyx-lobes are not exactly "imbricate," as indicated in my key (Contr. U. S. Nat. Herb. **28**: 463. 1932) for *C. compacta* A. C. Smith, this Colombian species nevertheless appears to be the closest ally of the new species. *Cavendishia calycina* differs from *C. compacta* in its smaller leaf-blades with the nerves oriented nearer the base, its more compact inflorescences, thinner and larger bracts, and smaller calyx, especially as regards the lobes, which are erect but not imbricate nor thickened at the margin.

CAVENDISHIA CAPITULATA Donn. Sm. Bot. Gaz. **25**: 147. 1898; A. C. Smith, Contr. U. S. Nat. Herb. **28**: 450. 1932.—CHIRIQUÍ: alt. 1500–1900 m., *Allen 1434* (Mo), *Davidson 92* (A), *120* (A), *Woodson & Schery 574* (NY), *576* (Mo), *632* (NY); COCLÉ: alt. 1000 m., *Allen 2721* (A).

Although known from abundant material collected in Costa Rica, the above-cited specimens are apparently the first of the species from Panama.

CAVENDISHIA LONGIFLORA Donn. Sm. Bot. Gaz. **37**: 420. 1904; A. C. Smith, Contr. U. S. Nat. Herb. **28**: 452. 1932.—COCLÉ: epiphytic shrub, the bracts and flowers bright rose; hills north of El Valle de Antón, alt. 650–1000 m., *Woodson & Schery 193* (NY); epiphytic shrub, the branches 2 m. long; bracts rose-pink, the corollas white; *Allen 2207* (A, Mo).

This species has previously been known only from the type locality near La Palma, San José, Costa Rica. A recently collected specimen from the Province of Chiriquí in Panama, *Seibert 176* (US), also doubtless represents the species, but it is a form with very narrow leaves.

CAVENDISHIA STENOPHYLLA A. C. Smith, Ann. Missouri Bot. Gard. **27**: 327. 1940.—COCLÉ: epiphytic shrub 1 m. high; flowers purple; hills north of El Valle de Antón, alt. 1000 m., *Allen 2162* (A); shrub 1.5 m. high, growing on steep banks along trails; flowers deep purple; vicinity of La Mesa, north of El Valle de Antón, alt. 1000 m., *Allen 2373* (A, Mo).

The cited specimens are the second and third collections of



the species and precisely match the type, *Allen 1880*, from the Province of Panama. The following description may now be added to the original:

Rhachis inflorescentiae ad 10 cm. longa, corolla tenuiter carnosa cylindrica sub anthesi 16–19 mm. longa et 4–5 mm. diametro, basi paullo contracta, extus pilis circiter 0.3 mm. longis laxe cinereo-puberula, lobis 5 deltoideis subacutis circiter 1 mm. longis et 2 mm. latis; staminibus subaequalibus, filamentis submembranaceis ligulatis distaliter parce puberulis alternatim circiter 2 mm. et 5 mm. longis, antheris gracilibus alternatim circiter 16 mm. et 13 mm. longis, tubulis quam loculis 1.5–2-plo longioribus; stylo gracili corollam subaequante, stigmatе obscuro.

CAVENDISHIA **chiriquiensis** sp. nov. Frutex epiphyticus gracilis, ramulis glabris fuscis subteretibus vel apicem versus saepe leviter complanatis; petiolis gracilibus subteretibus 4–7 mm. longis, juventute cinereo-puberulis mox glabris; laminis glabris chartaceis ovatis, 4.5–6 cm. longis, 1.5–2 cm. latis, basi obtusis, apice longe caudato-acuminatis (acumine gracili 1.5–2 cm. longo acuto), margine integris et saepe leviter recurvatis, 3 (obscure 5)-pli-nerviis, costa supra paullo impressa subtus elevata, nervis secundariis prope basim orientibus adscendentibus supra subplanis vel leviter impressis subtus prominulis, rete venularum supra saepe prominulo subtus immerso; inflorescentiis praeter corollas glabris axillaribus vel subterminalibus racemosis 6–8-floris, basi decidue bracteatis, pedunculo brevi, rhachi gracili leviter angulata 1.2–3.5 cm. longa; bracteis floriferis conspicuis papyraceis vel submembranaceis obovato-oblongis, 16–25 mm. longis, 4–10 mm. latis, basi angustatis, apice obtusis, utrinsecus glandulas circiter 10 margine gerentibus; pedicellis rectis 4–6 mm. longis basim versus bibracteolatis (bracteolis papyraceis oblongo-lanceolatis 1.5–2 mm. longis saepe glandulosis) apicem versus glandulas paucas magnas (0.2–0.3 mm. diametro) sessiles gerentibus; calyce 3.5–4 mm. longo, tubo cylindrico 2–3 mm. diametro basi obscure apophysato et velut pedicellis glanduloso, limbo papyraceo suberecto 2–3 mm. longo, lobis 5 deltoideis subacutis 0.7–1 mm.



longis textura omnino glandulosis, sinibus complanatis; corolla (unica immatura visa) cylindrica albo-puberulente; stylo persistente gracili 20–22 mm. longo, stigmatibus obscure peltatis.—CHIRIQUÍ: epiphytic shrub, the bracts rose, the flowers pale lavender-blue; vicinity of Bajo Chorro, alt. 1900 m., July 20–22, 1940, *Woodson & Schery 688* (NY, TYPE); Boquete Region, *von Hagen 2033* (A, NY).

Although the cited specimens lack mature corollas, I have no doubt that a new species is represented, as the essential characters of the inflorescence are found in the bracts, pedicels, and calyces. From the persistent styles, one may assume that the corolla is about 2 cm. long.

*Cavendishia chiriquiensis* is a very distinct species, characterized by its small caudate-acuminate, few-nerved leaf-blades, its glandular-margined bracts, and its glandular calyces and pedicels. Among Central American species, it is suggestive only of *C. Endresii* Hemsl., from which it differs in the above-mentioned characters, its shorter pedicels, more conspicuous bracteoles, and presumably longer corollas. Other relatives are the Colombian *C. rhynchophylla* A. C. Smith and *C. Purdiei* A. C. Smith, but these differ in obvious features of foliage and inflorescence.

CAVENDISHIA MICONIOIDES A. C. Smith, *Contr. U. S. Nat. Herb.* **28**: 503. 1932. (*Thibaudia melastomoides* H. B. K. *Nov. Gen. & Sp.* **3**: 272. 1818; *Cavendishia melastomoides* Hoer. *Bot. Jahrb.* **42**: 279. 1909; non Hemsl. 1881).—CHIRIQUÍ: tree 5 m. high; corolla red, white-tipped; between Casita Alta and Cerro Copete, alt. 2300–3300 m., *Woodson & Schery 357* (NY).

The species has previously been known from numerous collections in Colombia and Ecuador. The cited specimen from Panama has the leaves slightly smaller than the average of those from South America, but I find no consequential separating characters.

CAVENDISHIA PUBESCENS (H. B. K.) Hemsl. *Biol. Centr.-Amer. Bot.* **2**: 273. 1881; A. C. Smith, *Contr. U. S. Nat. Herb.* **28**: 485. 1932.—CHIRIQUÍ: shrub 2–3 m. high; bracts pale pink;



corolla white, faintly pink-tinged; Boquete Region, alt. about 1150 m., *Davidson 649 (A)*.

In making the above-cited combination, Hemsley cited *Seemann 1613* from Boquete, but, since I had not seen any material of the species from Panama in 1932, I did not include Panama in the range of this common South American species.

**SATYRIA *Allenii* sp. nov.** Frutex epiphyticus multiramosus ubique praeter inflorescentiam glaber, ramis ad 2.5 m. longis, ramulis crassis subteretibus (juventute angulatis) demum cinereis; petiolis rugosis crassis 6–10 mm. longis; laminis coriaceis siccitate fuscis elliptico-oblongis, 6–9 cm. longis, 2–3 cm. latis, basi acutis vel attenuatis, apice cuspidatis (acumine ad 4 mm. longo obtuso), margine integris et saepe conspicue recurvatis, 5-pli-nerviis, nervis interioribus 1–2 cm. supra basim orientibus cum costa supra impressis subtus prominentibus, nervis exterioribus paullo debilioribus, venulis immeris; inflorescentiis e ramulis defoliatis orientibus breviter racemosis ut videtur 2–6-floris, rhachi gracili glabra ad 8 mm. longa, pedicellis gracilibus (apicem versus conspicue gradatim incrassatis) 9–11 mm. longis distaliter albo-puberulis, basi bracteis oblongis circiter 1.5 mm. longis subtentis, prope medium inconspicue bibracteolatis; calyce ubique extus pilis patentibus circiter 0.2 mm. longis persistenter albo-puberulo, tubo circiter 2 mm. longo et 3 mm. diametro, limbo erecto-patente circiter 2 mm. longo tenuiter carnosio, lobis 5 deltoideis acutis circiter 1 mm. longis et 2.5 mm. latis; corolla carnosio urceolata, 10–13 mm. longa, basim versus 4–6 mm. diametro, apicem versus ad 2–3 mm. diametro contracta, distaliter ut calyce albo-puberula, lobis 5 acutis circiter 0.7 mm. longis et 1.3 mm. latis; staminibus 10 alternatim circiter 4 mm. et 4.5 mm. longis, filamentis glabris in tubo membranaceo pallido circiter 2.5 mm. longo connatis, antheris alternatim circiter 2 mm. et 2.3 mm. longis, tubulis latis poris circiter 0.6 mm. longis dehiscentibus; stylo gracili corollam subaequante, stigmatem minuto subpeltato.—COCLÉ: much-branched epiphytic shrub, the branches to 2.5 m. long, the flowers arising from old branchlets; pedicel and calyx coral-pink; corolla coral-pink, the distal



portion pure white; vicinity of La Mesa, north of El Valle de Antón, alt. 1000 m., April 12, 1941, *Allen 2367* (A, TYPE).

*Satyria Allenii* is closely related only to *S. meiantha* Donn. Sm. of Guatemala and British Honduras, from which it differs in its smaller leaf-blades with more highly connate secondary nerves and completely immersed veinlets, its persistently puberulent calyx, and its smaller anthers. The common Central American *S. Warszewiczii* Kl. differs from *S. Allenii* in its long pedicels, glabrous flowers, and much longer corollas and anthers. *Satyria ovata* A. C. Smith differs from the new species in its proportionately broader and obtuse leaf-blades, apparent veinlets, elongate corollas, etc.

DISTERIGMA HUMBOLDTII (Kl.) Nied. Bot. Jahrb. 11: 224. 1889; A. C. Smith, Brittonia 1: 222. 1933.—CHIRIQUÍ: epiphytic shrubs with pale pink flowers; vicinity of Bajo Chorro, alt. 1900 m., *Woodson & Schery 633* (NY), 684 (NY).

Although not otherwise reported from Panama, the species occurs in some abundance in the adjacent parts of Costa Rica and also in Colombia; it will doubtless be found in other parts of Panama.

#### THEOPHRASTACEAE

(C. L. Lundell, Ann Arbor, Mich.)

CLAVIJA **Alleni** Lundell, sp. nov. Arbor, ramulis crassis. Folia petiolata, petiolo ad 2 cm. longo, lamina glabra, subcoriacea, anguste cuneato-oblongata, 30–43 cm. longa, 6–7.5 cm. lata, apice acuta vel subacuminata, basi anguste cuneata, margine remote serrulata. Inflorescentiae ♂ pendulae, subpauciflorae, ad 36 cm. longae, parce minute puberulae. Pedicelli ad 2 mm. longi. Flores 4-meri. Sepala basi coalita, suborbicularia, 1–1.2 mm. longa, fimbriata. Corolla ca. 1 cm. diam., 6 mm. longa, aurantiaca, lobis suborbicularibus. Ovarium floris ♂ substipitifforme.

A tree, 10 m. tall, branchlets thick, about 1.2 cm. in diam., with the leaves crowded at the apex, obscurely and minutely furfuraceous. Petioles thick, up to 2 cm. long, the basal half drying blackish. Leaf blades glabrous, subcoriaceous, slightly paler beneath, narrowly cuneate-oblongate, 30–43 cm. long,



6–7.5 cm. wide, apex acute or subacuminate, base narrowly cuneate, decurrent, margin remotely serrulate, the teeth not over 1 mm. long, veinlets reticulate on both surfaces. Staminate racemes borne chiefly below the leaves on old wood, slender, pendulous, up to 36 cm. long, sparsely puberulent, with few scattered flowers. Bractlets minute, triangular, about 0.5 mm. long, minutely puberulent. Pedicels reflexed, minutely puberulent, up to 2 mm. long, usually about 1.4 mm. long. Flowers orange-colored, 4-merous. Sepals suborbicular, 1–1.2 mm. long, fimbriate. Corolla about 1 cm. in diam., 6 mm. long, the basal third connate, the lobes suborbicular. Staminodia alternate with the petals, small. Stamens united into a tube, conglutinate, 8-dentate from above. Abortive ovary substipitiform.—CANAL ZONE: vicinity of Madden Dam, alt. 100 m., Aug. 1, 1941, *P. H. Allen 2671* (Herb. Missouri Bot. Gard., TYPE; Herb. Univ. Michigan, fragment of TYPE).

The narrowly cuneate-oblongate serrulate leaf blades, long pendulous puberulent staminate racemes, and short puberulent reflexed pedicels characterize the species. The other members of the genus known from Central America all have entire leaves.

#### MYRSINACEAE

(*C. L. Lundell, Ann Arbor, Mich.*)

*ARDISIA coclensis* Lundell, sp. nov. Arbor parva, ramulis crassis, furfuraceis. Folia petiolata, petiolo ad 1.5 cm. longo, lamina subcoriacea, integra, cuneato-oblongata vel elliptico-oblonga, 15–22 cm. longa, 5.6–8.2 cm. lata, apice acuta, basi cuneata. Inflorescentiae terminales, pyramidales, corymbosae, lepidotae. Pedicelli ad 1.8 cm. longi. Sepala 5, late ovata, 3–3.5 mm. longa, ciliata, punctata. Petala 5, lanceolato-oblonga, 10–11 mm. longa, acuta, reflexa. Stamina ca. 9 mm. longa.

A small tree, 3 m. high; branchlets thick, furfuraceous, the scales brownish, compact. Petioles stout, up to 1.5 cm. long. Leaves clustered at apex of branchlet, the blades pallid, subcoriaceous, entire, cuneate-oblongate or elliptic-oblong, 15–22 cm. long, 5.6–8.2 cm. wide, apex acute, base cuneate, decurrent, sparsely lepidote beneath, costa slightly impressed



above, prominent beneath, the primary lateral veins fine but evident on both surfaces, obscurely reticulate. Inflorescence brown-lepidote, terminal, pyramidal, weak with slender rachis and primary branches, 22 cm. long, 18 cm. wide, the flowers corymbose, comparatively few, large, rose-pink. Pedicels lepidote, slender, up to 1.8 cm. long. Sepals 5, free almost to base, broadly ovate, 3–3.5 mm. long, apex rounded and obliquely emarginate, lepidote and punctate, ciliate. Petals 5, cohering at base only, lanceolate-oblong, 10–11 mm. long, acute, inconspicuously punctate, reflexed at anthesis. Stamens about 9 mm. long; filaments united into a tube about 2 mm. long; anthers sessile, erect, lanceolate, acuminate, cohering at base. Ovary subglobose, glabrous; style equaling stamens.—COCLÉ: vicinity of El Valle de Antón, alt. about 600 m., *P. H. Allen 2056* (Herb. Univ. Michigan, TYPE).

*A. coclensis*, apparently referable to the subgenus *Icacorea*, has peculiar stamen characteristics somewhat suggestive of the subgenus *Walleniopsis*. The filaments coalesce into a tube and the erect sessile anthers adhere at base. The species may have affinity to *A. Pittieri* Mez, a plant known to the writer only from Standley's brief description (Field Mus. Publ. Bot. **18**: 893. 1938).

**ARDISIA geniculata** Lundell, sp. nov. Arbor parva, ramulis furfuraceis. Folia petiolata, petiolo 3–6 mm. longo, lamina membranacea, anguste elliptica vel oblanceolato-elliptica, 5.8–11 cm. longa, 2.5–4.3 cm. lata, apice subabrupte acuminata, acumine obtuso, basi attenuata, parce lepidota. Inflorescentiae geniculatae, terminales, lepidotae, subumbellatae. Pedicelli ad 10 mm. longi. Sepala 5, late ovata, 1 mm. longa, subintegra. Petala 5, lineari-oblonga, 5 mm. longa. Stamina 3.5 mm. longa.

A tree, 4 to 5 m. high; branchlets slender, furfuraceous, ferruginous. Petioles furfuraceous, canaliculate, 3–6 mm. long. Leaf blades membranaceous, paler beneath, narrowly elliptic or oblanceolate-elliptic, 5.8–11 cm. long, 2.5–4.3 cm. wide, apex subabruptly acuminate, the acumen obtusish, base attenuate, decurrent, sparsely lepidote, costa plane above, prominent beneath, primary veins 12–16 on each side, conspicuous beneath.



Inflorescence terminal, abruptly geniculate at base, lepidote, bipinnate, few-flowered, less than 4 cm. long, the flowers sub-umbellate, white. Pedicels slender, up to 10 mm. long. Sepals 5, broadly ovate, 1 mm. long, prominently punctate, the margin scarious, subentire, apex rounded, obscurely emarginate laterally. Petals 5, linear-oblong, slightly wider above middle, 5 mm. long, united (1 mm.) at base, acutish, orange-punctate. Stamens about 3.5 mm. long; filaments stout, less than 1 mm. long; anthers linear-lanceolate, concolorous, abruptly apiculate, dehiscent apically. Ovary glabrous; style slender, 4 mm. long.—CHIRIQUÍ: vicinity of San Bartolomé, Peninsula de Burica, alt. up to 5 m., July 28–Aug. 1, 1940, *Woodson & Schery 944* (Herb. Univ. Michigan, TYPE).

*A. geniculata*, referable to the subgenus *Icacorea*, is noteworthy for its geniculate inflorescence.

**ARDISIA rigidifolia** Lundell, sp. nov. Arbor parva, ramulis crassiusculis. Folia petiolata, petiolo crassiusculo, 3–5 mm. longo, lamina rigide coriacea, pallida, elliptica, 3.5–6.5 cm. longa, 2–3.2 cm. lata, apice obtusa, basi late cuneata. Inflorescentiae terminales, pyramidales, ad 7 cm. longae et latae, furfuraceae, umbellatae. Pedicelli 4–5 mm. longi. Sepala 5, ovata, 1–1.3 mm. longa, minute erosa. Petala 5, oblonga, 5 mm. longa, apice acutiuscula. Stamina ca. 3.5 mm. longa. Stylus 5.2 mm. longus.

A small tree, 2.5 m. high; buds and tips of branchlets dark reddish brown, furfuraceous; branchlets rather thick, gnarled, with very short internodes. Petioles stout, 3–5 mm. long. Leaves clustered at ends of branchlets, the blades rigidly coriaceous, pallid, paler on under surface, minutely punctate, elliptic, 3.5–6.5 cm. long, 2–3.2 cm. wide, apex obtuse or obtusely subacuminate, base broadly cuneate, decurrent, costa plane above, prominent beneath, primary veins slender, prominulous beneath. Inflorescence terminal, tripinnately paniculate, pyramidal, up to 7 cm. long and wide, furfuraceous, many-flowered, the flowers white, umbellate; bractlets up to 1 cm. long, lepidote. Pedicels 4–5 mm. long. Sepals 5, ovate, 1–1.3 mm. long, punctate with few conspicuous orange-red glands, the



margin scarious, minutely erose. Petals 5, oblong, 5 mm. long, apex acutish, asymmetrical, punctate with few inconspicuous glands. Stamens about 3.5 mm. long; filaments about 1 mm. long, thick; anthers lanceolate, concolorous, apically dehiscent, not apiculate. Ovary glabrous; style 5.2 mm. long.—COCLÉ: vicinity of El Valle, alt. 800–1000 m., Dec. 22, 1936, *P. H. Allen* 71 (Herb. Univ. Michigan, TYPE).

*A. rigidifolia* is a none too well marked species related to *A. minor* Standl., and referable to the subgenus *Icacorea*. From *A. minor* it differs in having gnarled branchlets, small rigidly coriaceous leaves, comparatively large tripinnately paniculate furfuraceous inflorescences, smaller sepals, and a longer style.

ARDISIA **Scheryi** Lundell, sp. nov. Arbor glabra, ramulis crassiusculis. Folia petiolata, petiolo ad 8 mm. longo, lamina glabra, integra, coriacea, lanceolata vel lanceolato-elliptica, 4.5–7.5 cm. longa, 1.6–3.2 cm. lata, apice acuminata, basi acutiuscula. Inflorescentiae terminales, pyramidales, multiflorae, umbellatae. Pedicelli 2–3 mm. longi. Sepala fere 1 mm. longa, subintegra. Corolla glabra, 4 mm. longa. Stamina 3 mm. longa. Antherae latae, oblongo-ellipticae, apice rotundatae et minute emarginatae. Ovarium glabrum.

A tree, 20 m. high; branchlets reddish, rather stout, glabrous. Petioles narrowly winged, up to 8 mm. long. Leaf blades entire, glabrous, coriaceous, drying reddish-brown, paler beneath, lanceolate or lanceolate-elliptic, 4.5–7.5 cm. long, 1.6–3.2 cm. wide, apex attenuate, acuminate, base acutish, decurrent, primary veins conspicuous on both surfaces. Inflorescence terminal, pyramidal, up to 14.5 cm. long, 13.5 cm. wide, glabrous, reddish-brown; the flowers pale pink, numerous, umbellate. Pedicels slender, 2–3 mm. long, glabrous. Flower buds about 3 mm. long. Sepals scarcely 1 mm. long, ovate, subentire, scarious, prominently orange-punctate. Corolla 4 mm. long, the petals short connate at base, lanceolate-oblong, acutish, orange-punctate, glabrous. Stamens 3 mm. long; anthers oblong-elliptic, nearly twice as long as filaments, rounded and shallowly notched at apex. Ovary globose, glabrous.—CHIRI-



quí: vicinity of Bajo Chorro, alt. 1900 m., July 20–22, 1940, *Woodson & Schery 686* (Herb. Univ. Michigan, TYPE).

*A. Scheryi*, which belongs to the subgenus *Icacorea*, is allied to *A. multiflora* Griseb. and *A. pallidiflora* Standl. From the two, *A. Scheryi* may be recognized immediately by its short pedicels. The tree is remarkably large for the genus.

*ARDISIA SEIBERTII* Standl., Ann. Missouri Bot. Gard. **24**: 198. 1937.—COCLÉ: flowers white; El Valle de Antón and vicinity, alt. 500–700 m., July 23–27, 1935, *R. J. Seibert 456* (Herb. Field Mus., TYPE); a small tree, 3 m. high, fleshy calyx pink; vicinity of El Valle, alt. 800–1000 m., Dec. 22, 1936, *P. H. Allen 72*; a small tree, 2 m., flowers pale pink; vicinity of El Valle, alt. 800–1000 m., Sept. 5, 1938, *Allen 786*; a tree, 8 m. high, calyx and pedicels white, corolla pink; between Las Margaritas and El Valle, July 15–Aug. 8, 1938, *R. E. Woodson, Jr., P. H. Allen & R. J. Seibert 1239*; a shrub, 3 m. high, petals white, faint lavender-tinged; same locality and date, *Woodson, Allen & Seibert 1746*; a small tree, 4 m. high, flowers pale lavender; north rim of El Valle, June 4, 1939, *P. H. Allen & A. H. G. Alston 1846*; PANAMÁ: a small tree, 3 m. high, flowers pink; summit of Cerro Campana, alt. 800–1000 m., Sept. 1, 1940, *Allen 2226*.

*A. Seibertii* is very close to *A. opegrapha* Oerst. of the subgenus *Graphardisia*. *A. opegrapha* has larger narrower oblanceolate rather than elliptic or oblanceolate-elliptic leaves, somewhat less ample inflorescences, shorter fruiting pedicels, and narrower smaller sepals. These are differences of perhaps minor importance.

For the loan of the type of *A. Seibertii*, an isotype of *A. opegrapha*, and other material of these in the Field Museum Herbarium the writer is indebted to the Director, Mr. C. C. Gregg.

*ARDISIA Woodsoni* Lundell, sp. nov. Arbor parva. Folia petiolata, petiolo crassiusculo, ad 6 mm. longo, lamina coriacea, integra, 5–7.5 cm. longa, 1.7–2.8 cm. lata, apice obtusa, basi late cuneata. Inflorescentiae terminales, ca. 5 cm. longae, glabrae, subcorymbosae. Pedicelli 1–1.3 cm. longi. Sepala 5,



late ovata, ca. 2 mm. longa, subintegra. Bacca globosa, 6 mm. diam.

A tree, 8 m. high, buds and tips of branchlets furfuraceous, glabrous otherwise; branchlets slender, terete and brown. Petioles comparatively stout, marginate to base, up to 6 mm. long. Leaf blades coriaceous, paler beneath, entire, 5–7.5 cm. long, 1.7–2.8 cm. wide, apex narrowed to an obtuse point, base broadly cuneate, decurrent, costa plane above, slightly elevated on lower surface, primary veins slender, evident but not conspicuous. Inflorescence terminal, about 5 cm. long, few-flowered, the flowers subcorymbose. Pedicels slender, 1–1.3 cm. long, slightly curved. Sepals 5, broadly ovate, about 2 mm. long, rounded at apex, punctate with conspicuous orange-red dots, the margin scarious, minutely erose, essentially entire. Berries globose, 6 mm. in diam., black-purple when ripe.—CHIRIQUÍ: vicinity of Finca Lérída, alt. 1750 m., July 7–11, 1940, *Woodson & Schery 230* (Herb. Univ. Michigan, TYPE).

*A. Woodsoni* belongs to the subgenus *Icacorea* where its nearest relative appears to be *A. minor* Standl. *A. minor* is described as having stout pedicels 2–5 mm. long, while the pedicels of *A. Woodsoni* are slender and usually exceed 1 cm. in length.

PARATHESIS **Woodsoni** Lundell, sp. nov. Arbor, ramulis furfuraceis. Folia petiolata, petiolo 7–12 mm. longo, lamina chartacea, oblanceolata, 5–9 cm. longa, 1.5–2.6 cm. lata, apice acuminata, acumine obtusiusculo, basi acuta, subintegra, supra glabra, subtus parce lepidota. Inflorescentiae axillares, ad 12 cm. longae, parce lepidotae. Pedicelli 7–11 mm. longi. Sepala 5, anguste triangularia, 1–1.2 mm. longa, punctata. Petala 5, extus puberula, intus tomentosa, punctata, lanceolato-attenuata, 6 mm. longa. Stamina 3–3.5 mm. longa, filamentis glabris, antheris ca. 2.3 mm. longis, haud punctatis. Ovarium ad apicem tomentellum; stylus basi tomentellus. Bacca depresso-globosa.

A tree; branchlets furfuraceous, ferruginous, rather slender, with short internodes and conspicuous leaf scars. Petioles furfuraceous, canaliculate, 7–12 mm. long. Leaf blades thinly



chartaceous, oblanceolate, 5–9 cm. long, 1.5–2.6 cm. wide, apex short-acuminate, the acumen obtusish, base acute, slightly decurrent, margin somewhat repand, essentially entire, rather sparsely lepidote beneath, minutely but conspicuously black-punctate, costa slightly impressed above, prominent beneath, the primary veins slender, 11–14 on each side, prominulous. Inflorescence axillary, up to 12 cm. long, with long slender peduncle, sparsely lepidote, ferruginous. Pedicels slender, 7–11 mm. long. Sepals puberulent, punctate, narrowly triangular, 1–1.2 mm. long. Corolla pink, the petals puberulent outside, tomentose within, conspicuously linear-punctate, lanceolate-attenuate, widest at base, 6 mm. long. Stamens 3–3.5 mm. long; filaments glabrous, subequaling anthers; anthers about 2.3 mm. long, base sagittate, attenuate to an acutish apex, concolorous, not punctate. Apical half of ovary and base of style tomentellous, the style about 5 mm. long, linear-punctate. Berries deep purple, depressed-globose, about 7 mm. in diam.—CHIRIQUÍ: Finca Lérída to Peña Blanca, 1750–2000 m., July 9, 1940, *Woodson & Schery 331* (Herb. Univ. Michigan, TYPE).

*P. Woodsoni*, closely allied to *P. Seibertii* Lundell, differs in its smaller leaves, considerably longer pedicels, larger flowers, and concolorous anthers. The anthers are not punctate, and this is probably the most distinctive characteristic of the plant.

#### GENTIANACEAE

(*Caroline K. Allen, Jamaica Plain, Mass.*)

**HALENIA euryphylla**, n. sp. Herba perennis (?), caule simplici ramoso procumbente, inferiori reliquiis foliorum instructo, ad 50 cm. alto, paullo alato; internodiis inferioribus ad 2 cm., superioribus ad 7 cm. longis; foliis sessilibus, superioribus caulinis basi petiolum 0.5–1.5 cm. longum foliaceum simulantibus, longe attenuatis, lamina elliptica conspicue apiculata, 3-nerviis, nervio medio prominente, ad 7.5 cm. longis et 2.7 cm. latis; inflorescentia terminali raro axillari cymosa aliquid laxa et pauciflora, ad 6.5 cm. longa; calyce ad 1 cm. longo et corollae longitudinem ca.  $\frac{3}{4}$  aequante; lobis 3-nerviis oblanceolatis longe apiculatis minute papillosis; corolla (calcaribus in-



clusis) ad 1.5 cm. longa, ad 1 cm. lata, viridescenti-flava (fide collectoris), tubo totae corollae longitudinem  $\frac{1}{3}$  vel minus aequante; corollae lobis ellipticis, margine eroso; calcaribus corollae longitudinem fere aequantibus divaricatis leviter pendulis; capsula ovata ad 17 cm. longa, stylo apice longe apiculato; seminibus ellipsoideis 1.25 mm. longis.—CHIRIQUÍ: Casita Alta to Cerro Copete, ca. 2300–3300 m., July 10, 1940, *Woodson & Schery 362* (Gray Herb., TYPE, Herb. Missouri Bot. Gard., ISOTYPE).

The foliose stem and the general habit of this new species recall the widespread North American species *H. deflexa*. Actually *H. euryphylla* can claim close relationship with *H. guatemalensis* Loesener, but differs in its broad leaves, looser inflorescence and its flowers with divaricate, slightly pendulous, scarcely incurved spurs.

(*J. A. Steyermark, Chicago*)

**VOYRIA Allenii** Steyermark, sp. nov. Caulis crassiusculus 9–13 cm. altus, internodiis superioribus 4–5 mm. longis, inferioribus 13–17 mm. longis; flores vulgo solitarii et ramos terminantes, pedunculis 5–9 mm. longis; calycis tubus campanulatus 4.5–5 mm. longus, lobis 5 late ovatis obtusis minute ciliolatis 1.5–3 mm. longis; corolla laete rosea hypocrateriformis extus ubique minute puberula, 3.5–4 cm. longa, lobis elliptico-ovatis obtusis 1.4–1.5 cm. longis 0.8–0.9 cm. latis; filamenta brevissima, antheris subgloboso-rhomboideis 1.2–1.3 mm. longis; stylus gracilis 2.7 cm. longus.

Stem stout, 9–13 cm. high, 2–2.5 mm. thick, once-branched in the upper half; scales opposite, dull red, those on the upper floriferous stems 4–5 mm. apart, the ones in the lower portion of the stems 13–17 mm. apart, broadly ovate, 4–5 mm. long, 3–4 mm. broad, the sinus subacute, obtuse to rounded, minutely ciliolate, connate in lower half to third, glabrous; usually a solitary bright pink flower terminating each branch of the stem; peduncles 5–9 mm. long, stout; calyx-tube campanulate, 4.5–5 mm. long, 3–6 mm. wide at the throat, lobes 5, minutely ciliolate, broadly ovate, obtuse, 1.5–3 mm. long, 1.5–3 mm. broad



at the base, subequal; corolla bright pink, large and showy, hypocrateriform, broadened at the base around the ovary and slightly constricted in the upper portion below the insertion of the stamens, minutely puberulous over the entire outer surface, 3.5–4 cm. long, broadened to 5–6 mm. around the ovary, slightly narrower in upper half, lobes elliptic-ovate, obtuse, the margins round-curved and narrowed at the base, 1.4–1.5 cm. long, 0.8–0.9 cm. broad, minutely papillate without, minutely ciliolate; filaments inserted in the upper half of the tube 6–7 mm. below the throat, very short, 0.5 mm. long; anthers subglobose-rhomboid, 1.2–1.3 mm. long; style slender, 2.7 cm. long, glabrous; stigma dome-shaped, sinuate-peltate; ovary glabrous, ellipsoid, 8–9 mm. long, in fruit 1.5 cm. long, 5 mm. in diameter.—COCLÉ: hills north of El Valle de Antón, alt. 800 m., Sept. 8, 1940, *Allen 2240* (Herb. Field Mus., TYPE).

The genus *Voyria*, as delimited by Aublet and excluding species of *Leiphaimos* which have sometimes been merged with it, comprises a few rare and local species confined to Colombia and British Guiana. The genus has not hitherto been reported for Central America. *Voyria Allenii* is most closely related to *V. macrantha* Killip<sup>1</sup> described from Colombia, from which it differs in its shorter calyx-tube, shorter corolla-lobes, pink instead of red-purple corolla and corolla-tube puberulent throughout on the outside. From *V. rhodochroa* Sandwith,<sup>2</sup> it differs in the flowers borne solitary and terminal on the one or two branches, not fasciculate-corymbose, and in the larger corolla-lobes. From *V. rosea* Aubl. it differs in its obtuse calyx- and corolla-lobes and solitary terminally borne flowers, while from *V. caerulea* Aubl. it differs in its scales and calyx-lobes rounded and not acute, in its pink instead of blue or violet corollas, and fewer-branched stems.

#### APOCYNACEAE

**STEMMADENIA** *Allenii* Woodson, spec. nov. Arbuscula ca. 3 m. alta; ramulis gracilibus dichotome compositis omnino glabris. Folia opposita elliptica apice acute subcaudato-

<sup>1</sup> Journ. Wash. Acad. Sci. 26: 361. 1936.

<sup>2</sup> Kew Bull. 1931: 55. 1931.



acuminata basi in petiolo brevissimo ca. 0.5 cm. longo gradatim attenuata petiolo incluso 6–15 cm. longa 2.0–5.5 cm. lata membranacea glabra. Inflorescentia 1–4-flora; pedunculo ca. 1 cm. longo; pedicellis ca. 0.5 cm. longis omnino glabris. Calycis lobi oblongi obtusi 0.6–0.9 cm. longi subfoliacei glabri. Corolla “fere alba, centro dilute flava”; tubo proprio ca. 1.25 cm. longo basi ca. 0.3 cm. diam. apicem versus attenuato ibique et staminifero et sinistrorse contorto; faucibus conicis ca. 2 cm. longis ostio ca. 1 cm. diam.; lobis oblique obovatis ca. 1.5 cm. longis patulis. Folliculi anguste gibbosi angustissime attenuati ca. 3.5 cm. longi medio ca. 0.7 cm. crassi.—COCLÉ: hills north of El Valle de Antón, alt. ca. 1000 m., July 14, 1940, *P. H. Allen 2187* (Herb. Missouri Bot. Gard., TYPE); same locality, alt. 800 m., Sept. 8, 1940, *Allen 2239* (Herb. Missouri Bot. Gard., co-TYPE).

At first glance, this species was mistaken for *S. Alfari* (Donn. Sm.) Woodson, which, however, has much smaller calyx lobes, and smaller corollas with narrower throat and shorter lobes. Mr. Allen has taken considerable interest in this species, and finds it to be fairly abundant in the neighborhood of the type locality.

#### ASCLEPIADACEAE

**GONOLOBUS chiriquensis** Woodson, comb. nov. (*Vincetoxicum chiriquense* Woodson, in Woodson & Seibert, Ann. Missouri Bot. Gard. **24**: 199. 1937).

This combination will be made necessary by the impending conservation of *Vincetoxicum* Moench over *Vincetoxicum* Walt. (see Perry, *Rhodora* **40**: 281–282. 1938).

**GONOLOBUS fuscoviolaceus** Woodson, spec. nov. Frutex volubilis; ramulis gracilibus glabris, internodiis 7–12 cm. longis. Folia petiolata ovato-oblonga basi late rotundata fere cordata apice subcaudato-acuminata 4.5–11.0 cm. longa 1.5–4.5 cm. lata firme membranacea glabra subtus pallidiora, petiolo 1.5–2.5 cm. longo. Inflorescentia bostrycino-umbellata pluriflora; pedunculo ca. 1 cm. longo glabro; pedicellis ca. 0.5 cm. longis glabris; bracteis vix manifestis. Flores viridi-fusci; calycis



laciniis ovato-oblongis acutis glabris 0.25 cm. longis; corolla rotata ca. 0.9 cm. diam. faucibus minute pilosulis caeterumque glabra, lobis late ovatis obtusis minute emarginatis patulis; gynostegio subsessili ca. 0.15 cm. diam., stigmatе depresso, polliniis cochleariformibus caudiculis inclusis ca. 0.05 cm. longis; corona rotata margine leviter crenulata gynostegium vix aequante. Folliculi immaturi fusiformes laeves glabri.—CHIRIQUÍ: vicinity of Bajo Chorro, alt. 1900 m., July 20–22, 1940, *Woodson & Schery 695* (Herb. Missouri Bot. Gard., TYPE). Most closely related to the preceding, but differing in the conspicuously smaller leaves and flowers. These two species differ from those of typical *Gonolobus* in the fact that the anthers are placed about the margin of the stigma head and not beneath it, together with other rather slight characters which probably should be viewed as subgeneric rather than as generic. Similar characters have not been found to be generic in other Gonolobeae.

## CONVOLVULACEAE

IPOMOEA DEMERARIANA Choisy (determination from herbarium comparisons, but type not available). Probably the same as *Ipomoea cardiosepala* Meisn. of Colombia, a later name published in Mart. Fl. Bras. Also specimens of this species can be found in herbaria evidently incorrectly labeled as *Ipomoea phillomega* (Vell.) House.—BOCAS DEL TORO: vicinity of Isla Colon, alt. 0–120 m., Aug. 23, 1940, *H. von Wedel 514*. Previously known from South America and the West Indies.

IPOMOEA **mucronata** Schery, spec. nov. Suffrutex volubilis in fruticibus; caulibus, pedunculis petiolisque summe pubescentibus; laminis foliorum integris, lanceolatis, profunde cordatis, 4–9 cm. longis, prope basim 4–9 cm. latis, utrinque pubescentibus praesertim in venulis, petiolis quam laminis longioribus, 4–14 cm. longis; pedunculis quam petiolis longioribus, 10–25 cm. longis; inflorescentiis subcorymbiformibus, floribus multis vel paucis, terminalibus 3.5–4.5 cm. longis, puniceo-purpureis, pedicellis pubescentibus floribus brevioribus (plerumque ca. 1 cm. longis); sepalis subaequalibus,



pilosis, oblongo-ellipticis, apice subulatis vel mucronatis, coriaceis, 7–11 mm. longis, 2–4 mm. latis; stylis persistentibus; capsulis dehiscentibus, bicubiculis, apice leviter pilosis; seminibus glabris, suborbicularibus, ca. 4 mm. diametro cum locis figitis orbicularibus.—PANAMA: CHIRIQUÍ: near Peña Blanca, alt. 1750–2000 m., July 9, 1940, *Woodson & Schery 283, 323* (Herb. Missouri Bot. Gard., TYPE); COSTA RICA: SAN JOSÉ: vicinity of El General, alt. 850 m., Feb. 1936, *A. F. Skutch 2570*.

This species is close to *I. trichocarpa* Ell. and *I. longipes* Garcke, but differs chiefly in having dense pubescence, lavender or rose flowers and pilose sepals. The outer mucronate sepals are slightly smaller than the inner ones. The 2-celled capsule dehisces longitudinally, usually into three parts. In the specimen examined, only one seed developed in each capsule. The seed has a circular, raised, tire-like area at the point of attachment.

VERBENACEAE

(*H. N. Moldenke, New York*)

CITHAREXYLUM HIRTELLUM Standl.—CHIRIQUÍ: vicinity of Boquete, alt. 1200–1500 m., July 24–26, 1940, *Woodson & Schery 755*.

LABIATAE

(*C. C. Epling, Los Angeles*)

SALVIA IRAZUENSIS Fern.—CHIRIQUÍ: Potrero Muleto, Volcan de Chiriquí, alt. 10500 m., July 13, 1940, *Woodson & Schery 386*. Previously considered to be an endemic of Costa Rica.

SOLANACEAE

(*C. V. Morton, Washington, D. C.*)

SOLANUM SEAFORTHIANUM Andrews.—CHIRIQUÍ: vicinity of Finca Lériða, alt. 1750 m., July 7, 1940, *Woodson & Schery 239*. New to Panama. Probably escaped from cultivation.

SOLANUM QUINQUANGULARE Willd.—CHIRIQUÍ: Finca Lériða to Peña Blanca, alt. 1750–2000 m., July 9, 1940, *Woodson & Schery 290*. Previously known from northern South America.

SOLANUM ROBLENSE Bitt.—CHIRIQUÍ: vicinity of Callejon Seco, Volcan de Chiriquí, alt. 1700 m., July 17, 1940, *Woodson & Schery 487*. Previously known from Costa Rica.



*SOLANUM EVOLVULIFOLIUM* Greenm.—CHIRIQUÍ: vicinity of Bajo Chorro, alt. 1900 m., July 20, 1940, *Woodson & Schery* 649. Previously known from Costa Rica.

## GESNERIACEAE

(*C. V. Morton, Washington, D. C.*)

*DRYMONIA ALLOPLECTOIDES* Hanst.—COCLÉ: north rim of El Valle de Antón, near Cerro Turega, alt. 650–700 m., June 30, 1940, *Woodson & Schery* 162. New to Panama. Previously known from Costa Rica.

*ALLOPLECTUS ICHTHYODUMA* var. *PALLIDUS* Morton.—CHIRIQUÍ: Casita Alta to Cerro Copete, Volcan de Chiriquí, alt. 2300–3300 m., July 10, 1940, *Woodson & Schery* 359. Previously known from Costa Rica.

*COLUMNEA CONSANGUINEA* Hanst.—CHIRIQUÍ: vicinity of Bajo Chorro, alt. 1900 m., July 20, 1940, *Woodson & Schery* 651. Previously known from Costa Rica.

*CAMPANEA HUMBOLDTII* (Kl.) Oerst.—CHIRIQUÍ: vicinity of Bajo Chorro, alt. 1900 m., July 20, 1940, *Woodson & Schery* 656. Previously known from Costa Rica.

*BESLERIA PYCNOSUZYGIA* Donn. Sm.—CHIRIQUÍ: vicinity of Bajo Chorro, alt. 1900 m., July 21, 1940, *Woodson & Schery* 683. Previously known from Costa Rica.

*ACHIMENES CANDIDA* Lindl.—CHIRIQUÍ: llanos, vicinity of Boquete, alt. 1200–1500 m., July 26, 1940, *Woodson & Schery* 764. Previously known from Guatemala and Costa Rica.

## ACANTHACEAE

(*E. C. Leonard, Washington*)

*GLOCKERIA reflexiflora* Leonard, sp. nov. (fig. 1). Herba epiphytica, caulibus subteretibus glabris vel ad nodos puberulis; lamina foliorum oblonga vel oblongo-lanceolata, acuminata, basi angustata, membranacea, undulata, glabra, in costa et venis parce strigosa; petioli breves; panicula grandis, puberula, ramis tenuibus; bracteae subulatae; pedicelli reflexi; calyx glaber, segmentis anguste triangulatis; corolla glabra, aurantiaca, curvata, bilabiata, labio superiore oblongo apice minute



bidentato et serrato, inferiore trilobo, lobis brevibus, latis; stamina exserta; ovarium glabrum.

An epiphytic herb up to 1 meter high; stems subterete, glabrous or puberulent at the nodes; leaf blades oblong or oblong-lanceolate (one leaf of the uppermost pair excepted, this ovate,



Fig. 1. *Glockeria reflexiflora* Leonard: *a*, pair of leaves subtending the panicle to show asymmetry; *b*, portion of panicle; *c*, calyx; *d*, corolla; *e*, upper lip; *f*, lower lip (*a*, *b*, half natural size; *c*, *d*, *e*, *f*, twice natural size.)

subsessile, cordate at base), up to 13 cm. long and 4.5 cm. wide, acuminate (the tip blunt), narrowed at base, thin, undulate, glabrous, or the costa and lateral veins (6 or 7 pairs) sparingly strigillose; petioles up to 5 mm. long; flowers numerous, reflexed, borne in a puberulent terminal panicle 30 cm. long and about 10 cm. in diameter, the ultimate branches very slender;



bracts subulate, up to 3 mm. long; pedicels slender, 2 to 3 mm. long, reflexed; calyx 4 mm. long, glabrous, the segments narrowly triangular, 3 mm. long and 0.5 mm. wide at base, the tips blunt; corolla about 2 cm. long, orange, glabrous, slightly curved, 1 mm. in diameter at base, enlarged from the tip of the calyx to a tubular throat about 4 mm. in diameter, the upper lip erect, oblong, 5 mm. long, 3 mm. wide, rounded, minutely bidentate and serrate at tip, the lower lip short, truncate, with 3 low broad lobes; stamens exserted, the filaments flat, glabrous; ovary glabrous; capsule not seen.—CHIRIQUÍ: vicinity of Bajo Mona and Quebrada Chiquero, alt. 1500 m., July 18, 1940, *R. E. Woodson, Jr. & R. W. Schery 547* (U. S. Nat. Herb. No. 1,791,983, TYPE).

This species is easily recognized by its large puberulous panicle of reflexed orange flowers.

DICLIPTERA *gracilis* Leonard, sp. nov. (fig. 2). Herba, caulibus breviter striatis, glabris vel ad nodos tomentulosis; lamina foliorum lanceolato-ovata, acuta vel acuminata, basi rotundata, membranacea, integra, glabra, costa et venis obscure strigosis; petioli graciles; cymae tripartitae; pedunculi axillares graciles; bracteae capituli inaequales, coriaceae, ciliatae, intus puberulae, extus glabrae vel costa parce strigosa, bractea posterior linearis, obtusa, anterior lanceolata, apice rotundata; bracteolae lanceolatae, acutae, ciliatae, minute pubescentes; calycis segmenta anguste triangulata, minute pubescentia, leviter striata; corolla incarnata, pubescens, bilabiata, labio superiore acuminato, inferiore trilobo, lobis rotundatis; ovarium glabrum.

Herbaceous; stems up to 30 cm. high or more, ascending, 2 mm. in diameter or less, faintly striate, glabrous, or puberulous at the nodes; leaf blades lance-ovate, up to 3.5 cm. long and 1.6 cm. wide, acuminate at apex (the tip blunt), rounded at base and slightly decurrent on the petiole, thin, entire, glabrous except the costa and lateral veins (6 pairs), these inconspicuously and minutely strigose, more densely so above than beneath, sparingly ciliate, the cystoliths minute; petioles slender, up to 5 mm. long; cymes of 3 capitula on slender peduncles up to



5 cm. long, glabrous; pedicels 1 to 3 mm. long; bracts subtending the cymes similar to the leaves but smaller, those subtending



Fig. 2. *Dicliptera gracilis* Leonard: *a*, portion of plant, natural size; *b*, calyx, spread to show segments; *c* and *d*, bracts; *e*, bractlet (*b*, *c*, *d*, *e*, twice natural size).

ing the capitula unequal, firm, ciliate, the inner surface appressed-puberulent, the outer surface glabrous or the costa sparingly strigose, the larger bract linear, 13 mm. long, 2.5



mm. wide near tip and base, 2 mm. wide at middle, obtuse, 3-nerved, the lateral nerves inconspicuous, the margins subhyaline near the base, the smaller bract of the pair lanceolate, 7 mm. long, 2.5 mm. wide at base, rounded at apex, 1-nerved, the margins subhyaline; bractlets lanceolate, 5.5 mm. long, 1.5 mm. wide at middle, acute, 1-nerved, finely pubescent toward the tip, ciliate; calyx 7 mm. long, finely pubescent toward tip, ciliate, the hairs of the inner surface appressed, the segments narrowly triangular, 4 mm. long, 1 mm. wide at base, gradually narrowed to a slender tip, faintly striate-nerved; corolla 3 cm. long, bright pink, pubescent (except the lower portion), 2.5 mm. in diameter at base, narrowed to 1.5 mm. at tip of calyx, thence enlarged to about 7 mm. and narrowed again to 4 mm. at mouth, the posterior lip 8 mm. long, acuminate, the lower lip about 5 mm. long, with 3 rounded lobes; ovary glabrous; capsule not seen.—CHIRIQUÍ: vicinity of Bajo Mona and Quebrada Chiquero, alt. 1500 m., July 18, 1940, *R. E. Woodson, Jr. & R. W. Schery 569* (Herb. Missouri Bot. Gard., TYPE).

Related to *D. trifurca* Oerst., but easily distinguished from that by its small thin leaf blades with rounded bases and by the much smaller bracts.

#### CUCURBITACEAE

*FRANTZIA PITTIERI* (Cogn.) Pittier—BOCAS DEL TORO: Nievecita, alt. 100 m., Aug. 3–20, 1940, *Woodson & Schery 1062*. Previously known from Costa Rica.

*FEVILLEA CORDIFOLIA* L.—CHIRIQUÍ: vicinity of San Bartolomé, Peninsula de Burica, alt. 0–50 m., July 28–Aug. 1, 1940, *Woodson & Schery 872*. Previously reported from Costa Rica and evidently widely distributed in tropical America. Also known from the West Indies and South America.

#### RUBIACEAE

(*P. C. Standley, Chicago*)

*CEPHAELIS chiriquensis* Standl., sp. nov. Frutex metralis omnino glaber, ramis crassiusculis teretibus, internodiis superioribus 3–7.5 cm. longis; stipulae ca. 1 cm. longae vel paullo breviores crassae fere ad basin bilobae, lobis approximatis late



oblongis apice anguste rotundatis erectis; folia longiuscule petiolata chartacea, petiolo gracili 2.5–3 cm. longo; lamina elliptico-ovalis 9–14.5 cm. longa 4.5–7 cm. lata, apice abrupte breviter acuminata, acumine anguste triangulari, basi acuta, concolor, costa gracili subtus bene elevata, nervis lateralibus utroque latere ca. 20 teneris prominentibus arcuatis regularibus et parallelis, venulis fere obsoletis; inflorescentia terminalis sessilis e capitulis 3 breviter pedunculatis composita, pedunculis crassissimis 7–10 mm. longis; capitula inaequalia, lateralibus paullo minoribus, centrali fere 2 cm. alta et aequilata; bracteae exteriores coriaceae fere 2 cm. longae late ovatae acutae vel acuminatae, interioribus paullo brevioribus ovatis vel oblongo-ovatis, intimis lanceolatis vel lineari-lanceolatis; flores bene evoluti non visi.—CHIRIQUÍ: vicinity of Bajo Chorro, alt. 1900 m., July 20–22, 1940, *Woodson & Schery 610* (Herb. Field Mus., TYPE).

The bracts are said to be purple. The species is not especially close to any other known from Panama or elsewhere in Central America. The inflorescence is distinctive, consisting of three large, terminal, short-pedunculate heads.

**FARAMEA Woodsonii** Standl., sp. nov. Frutex 1–2-metralis omnino glaber, ramis gracillimis teretibus viridibus, internodiis plerumque brevibus; stipulae 6–7 mm. longae virides breviter connatae sublaxae et non adpressae, basi late ovatae, sensim in setam rigidam attenuatae, persistentes; folia interminora breviter petiolata laete viridia firme crasseque membranacea, petiolo crassiusculo 3–4 mm. tantum longo; lamina ovali-elliptica vel elliptico-oblonga 5–7.5 cm. longa 1.5–3 cm. lata subito breviter acuminata, basi acuta vel subacuta, supra sublucida, costa tenera prominente, subtus paullo pallidior, costa prominente, nervis lateralibus utroque latere ca. 8 tenerimis vix elevatis angulo lato fere recto abeuntibus remote a margine laxae junctis, venulis fere obsoletis; inflorescentia terminalis umbelliformis pauciflora erecta 1.5–2 cm. longe pedunculata, basi foliis 2 lanceolato-oblongis viridibus acuminatis 1.5–2.5 cm. longis bracteiformibus fulcrata; pedicelli graciles sed rigidi usque 8 mm. longi inaequales; hypanthium



1.2 mm. altum late obovoideum in sicco cyaneum, calyce vix 0.6 mm. longo remote denticulato, disco crasso calyce fere duplo longiore; corolla caerulea, tubo ca. 8 mm. longo sursum paullo dilatato et vix ultra 2 mm. lato, lobis 4 ut videtur patentibus lineari-lanceolatis longe sensim attenuatis ca. 14 mm. longis; antherae inclusae; stylus gracilis 3 mm. longus.—COCLÉ: north rim of El Valle de Antón, near Cerro Turega, alt. 650–700 m., June 30, 1940, *Woodson & Schery 164* (Herb. Field Mus., TYPE).

Not easily confused with any other Central American species, being well marked by the small umbels of blue flowers, each umbel subtended by two green, bract-like leaves. The general appearance of the plant somewhat suggests that of some species of *Cestrum*, a resemblance observable also in other species of *Faramea*, particularly certain South American ones.

HOFFMANIA AREOLATA Standl.—CHIRIQUÍ: vicinity of Bajo Chorro, alt. 1900 m., July, 1940, *Woodson & Schery 661*. A small shrub with yellow flowers. Known previously only from the type, which was obtained in the same region.

HOFFMANIA DAVIDSONIAE Standl.—Known previously only from the type, *Davidson 216*, from Bajo Chorro, Boquete District, Provincia de Chiriquí, at 1800 meters. An additional collection has been made recently: CHIRIQUÍ: vicinity of Bajo Mona and Quebrada Chiquero, alt. 1500 m., July, 1940, *Woodson & Schery 595*. The flowers are described as brownish-yellow; Mrs. Davidson described them as pale pink. Well-developed corollas, not described when the species was published, are present with the later collection. The corolla is glabrous outside, 5 to 6 mm. long, with a very short tube, scarcely one-third as long as the lobes.

HOFFMANNIA *Woodsonii* Standl., sp. nov. Frutex vel arbuscula 2–4-metralis omnino glabra ramosa, ramis subteretibus sordide in sicco brunneis gracilibus, internodiis brevibus; stipulae parvae latissime triangulares acutiusculae; folia interminora opposita graciliter petiolata membranacea, petiolo 1–2.2 cm. longo; lamina lanceolata usque oblongo-lanceolata, anguste elliptico-lanceolata, vel interdum lanceolato-ovata,



vulgo prope medium latissima, concolor, longe angusteque acuminata, basi cuneato-attenuata et decurrens, costa tenui vix subtus elevata, nervis lateralibus utroque latere 6-7 tenerimis leviter arcuatis angulo semirecto adscendentibus; flores axillares brevissime racemosi, racemis paucifloris petiolo vulgo paullo brevioribus brevissime pedunculatis, pedicellis gracilibus vix ad 3 mm. longis; hypanthium turbinatum in sicco angulatum 2 mm. longum basi angustatum, lobis 4, ca. 0.6 mm. longis latissime ovato-triangularibus acutiusculis; corolla lutea in alabastro acutiuscula 4-5 mm. longa, tubo crasso, lobis subpatentibus oblongis acutiusculis tubo bene longioribus; antherae lobis corollae paullo breviores; bacca ut videtur fere matura late oblongo-obovoidea vix ultra 2.5 mm. longa.—CHIRIQUÍ: vicinity of Callejón Seco, Volcán de Chiriquí, alt. 1700 m., July 17, 1940, *Woodson & Schery 503* (Herb. Field Mus., TYPE); Quebrada Velo, alt. 1800 m., July 8, 1940, *Woodson & Schery 260*.

In the key to species of *Hoffmannia* in 'North American Flora,' the present plant would run either to *H. chiapensis* Standl., a species of Guatemala and southern Mexico, with which it has no close relationship, or to *H. Pittieri* Standl., of the Volcán de Chiriquí, Panama. It is related to the latter, which, however, is larger in all parts and has a much more ample inflorescence, often copiously branched and always with more numerous flowers.

## COMPOSITAE

(*S. F. Blake, Washington, D. C.*)

ARCHIBACCHARIS **panamensis** Blake, sp. nov. Herba prope apicem ramosa 1.5 m. alta; caulis dense et sordide pilosiusculus; folia oblongo-elliptica v. elliptico-obovata brevissime petiolata acuta basi cuneata tenuia remote calloso-denticulata penninervia supra puberula subtus densius pilosiuscula; capitula feminea numerosa laxe cymoso-paniculata 5 mm. alta 20-21-flora, floribus hermaph. 1-2; phyllaria anguste linearia acuminata dorso puberula; corollae fem. ligulatae, ligula erecta 1 mm. alta ramis styli brevioribus; corollae hermaph. usque ad apicem tubae 5-partitae.



“Tall herb, 1.5 m. high;” stem simple below the inflorescence, bearing branches in the upper axils, subterete, somewhat striate, pithy, 3 mm. thick, straight, densely pilosiusculous with more or less crisped, many-celled, brownish hairs about 0.2 mm. long, not glandular; petioles broad, naked, sordid-puberulous, 1–1.5 mm. long; blades 7–9 cm. long, 2.3–3 cm. wide, callous-apiculate (apiculus 1 mm. long), remotely denticulate above the entire lower  $\frac{2}{5}$  of their length (teeth 5–8 pairs, slender, callous-tipped, about 0.5 mm. high, 4–11 mm. apart), above dark dull green, evenly puberulous on surface and veins with several-celled spreading hairs, more densely so on costa, beneath somewhat grayish-green, rather densely spreading-short-pilose with lax several-celled hairs (0.2–0.4 mm. long), more densely so along costa and veins, feather-veined (the principal veins about 6 pairs, prominulous beneath, the veinlets translucent, not prominulous, the costa prominent and whitish at base); leaves of the branches smaller; individual panicles terminal and in the upper axils, loose, many-headed, pubescent like the stem, on peduncles 6 cm. long or less, 1.5–6 cm. wide, together forming a large leafy panicle, the pedicels mostly 6–10 mm. long, filiform, naked or with a filiform-subulate bract; involucre about 4-seriate, graduated, 4–5 mm. high, the phyllaries narrowly linear or the outer linear-subulate, 0.2–0.5 mm. wide, acuminate, with greenish midline and whitish subscarios margin, the outer puberulous throughout, the middle puberulous on back above, the inmost glabrous except for the ciliolate tip; pistillate heads 5 mm. high, thick-cylindric (when moistened), 20–21-flowered, the pistillate flowers 18–20, the hermaphrodite 1–2; pistillate corollas about 2.7 mm. long, the tube slender, densely puberulous at apex, otherwise essentially glabrous, about 1.7 mm. long, the ligule erect, elliptic or oblong, concave, emarginate or 3-denticulate, 0.8–1 mm. long, white; hermaphrodite (staminate) corollas 3.2 mm. long, whitish, the tube 1.5 mm. long, sparsely puberulous, the limb 1.7 mm. long, campanulate, divided to the very base into 5 teeth, these oblong, acute, obscurely puberulous dorsally, about 0.4 mm. wide; achenes (scarcely mature)



of pistillate flowers oblong, strongly compressed, 4-nerved, rather densely hirsutulous, 1.4 mm. long, those of the hermaphrodite flowers inane, linear-oblong, densely hirsutulous, 1.2 mm. long; pappus of slender whitish bristles, about 3 mm. long; style branches of hermaphrodite flowers lance-oblong, very acute, hispidulous, about 0.7 mm. long; staminate plant unknown.—COCLÉ: vicinity of El Valle, alt. 100–800 m., Sept. 5, 1938, *P. H. Allen 751* (U. S. Nat. Herb., No. 1,793,562, TYPE).

Nearest *Archibaccharis irazuensis* Blake, in which the leaves are lanceolate and acuminate, the phyllaries broader, firmer, and less pubescent, the stem-pubescent longer, and the floral details different. In *A. irazuensis* the heads are 31–39-flowered, with 3–6 hermaphrodite flowers; the pistillate corollas are tubular-filiform, without ligule; and the hermaphrodite corollas have a definite throat (about 0.7 mm.), half as long as the teeth or more. *A. panamensis* appears to inhabit a very different life zone, since the recorded altitudes for specimens of *A. irazuensis* examined run from 1500–1900 to 2700–3000 meters in Costa Rica, and 3500–4000 meters in Panama (see below).

The genus *Archibaccharis* has not hitherto been known south of Costa Rica. Two additional species can also be recorded from Panama:

ARCHIBACCHARIS IRAZUENSIS Blake.—CHIRIQUÍ: Volcán de Chiriquí, between Potrero Muleto and summit, alt. 3500–4000 m., July 13–15, 1940, *Woodson & Schery 463*. Previously known from Volcan Irazú and its vicinity, and from the Cerro de las Vueltas in the Province of San José, Costa Rica.

ARCHIBACCHARIS TORQUIS Blake.—CHIRIQUÍ: vicinity of Callejón Seco, Volcán de Chiriquí, alt. 1700 m., July 17, 1940, *Woodson & Schery 481*. Previously known from Vera Cruz to Costa Rica.

PTEROCAULON ALOPECUROIDES (Lam.) DC.—PANAMÁ: hills above Campana, alt. 600–800 m., Dec. 23, 1938, *Allen 1325* (U. S. Nat. Herb.). Previously known from the West Indies and northern South America. The genus, apparently, has not been



recorded heretofore from the Mexican-Central American region.

*CLIBADIUM sessile* Blake, sp. nov. Frutex; caulis (supra) 6-angulatus striatus parce strigillosus; folia elliptico-lanceolata acuminata basi longe cuneata sessilia crenato-serrata pergamentacea longe supra basin triplinervia supra sparse tuberculato-strigillosa non aspera aetate bullata subtus aequaliter strigillosa ca. 14 cm. longa 4 cm. lata; panícula parva 4 cm. lata terminalis adscendenti-pilosa; capitula parviuscula 4-5 mm. alta sessilia per 3-6 glomerata, glomerulis 5-7 mm. diam. ca. 12 in pedunculis partialibus 4-6 mm. longis; phyllaria 2 ovata obtusa appressa 5-9-nervia breviter ciliata et prope apicem strigillosa; flor. fem. 3, hermaph. 6; receptaculum intra flor. fem. solum 1-paleatum; ovarium fem. glaberrimum.

Shrub 2 m. high; stem sparsely strigillose with subtuberculate-based hairs, whitish-pithy, 3 mm. thick above; upper internodes 5-8 cm. long; upper leaves 10-14.5 cm. long, 2.5-4 cm. wide, broadest near or slightly above the middle, acuminate to an obtusish callous tip and somewhat falcate, cuneate at base (the cuneate base entire, 3-5 cm. long), crenate-serrate with about 9-24 pairs of depressed callous-tipped teeth (these 0.5-1 mm. high, 3-9 mm. apart), above brownish green, evenly but not densely tuberculate-strigillose with mostly deciduous hairs with small persistent lepidote bases, more densely antrorse-strigose along the chief nerves, essentially smooth to the touch, in age slightly shining and somewhat bullate with impressed veins and veinlets, beneath lighter brownish green, uniformly but not densely strigillose on surface and veins, triplinerved 3-4 cm. above the base, 4-5 mm. wide at base, the bases of each pair not connate; panicle small, much surpassed by the upper leaves, more or less ternately divided, the peduncle 2 cm. long, the panicle as long, the bracts small, linear, 7 mm. long or less, subscariosus; phyllaries (in flower) brownish, 3.2-3.7 mm. long, 2-2.3 mm. wide; pistillate flowers all paleate, their pales similar to the phyllaries, their ovaries (immature) obovoid, obcompressed, perfectly glabrous, 1.2 mm. long, with a distinct inflexed beak, their corollas cylindric, 2-



toothed, white, glabrous, 1.6 mm. long; single pale of the disk oblong, obtuse, ciliate, 2.5 mm. long; ovaries of the hermaphrodite flowers villous at apex, their corollas (immature) white, 2.5 mm. long, hispidulous on the teeth.—CHIRIQUÍ: vicinity of Bajo Chorro, alt. 1900 m., July 20–22, 1940, *Woodson & Schery 658* (U. S. Nat. Arb. No. 124226, TYPE).

The only close ally of this species is *C. subsessilifolium* Hieron., of Ecuador, fragments from the type of which are in the U. S. National Herbarium. In that species the branches are described as “setose-hirtous with erect hairs” [Hieronymus] or “villous with erect hairs” [O. E. Schulz], the leaves are very rough above, antrorse-hirsute beneath, the larger subcordate at base, and the phyllaries are narrowly ovate, acuminate, 5 mm. long, with recurved reddish apex.

RUMFORDIA POLYMNIODES Greenm.—CHIRIQUÍ: vicinity of “New Switzerland,” central valley of Río Chiriquí Viejo, alt. 1800–2000 m., Jan. 6–14, 1939, *Allen 1413* (U. S. Nat. Herb.). Previously known only from Costa Rica.

LIABUM POLYANTHUM Klatt.—CHIRIQUÍ: Chiriquí Viejo Valley, April 26, 1938, *G. White 93* (U. S. Nat. Herb.); vine climbing to 8 m. on stumps, vicinity of “New Switzerland,” central valley of Río Chiriquí Viejo, alt. 1800–2000 m., Jan. 6–14, 1939, *Allen 1415* (U. S. Nat. Herb.). Previously known only from Costa Rica.

LIABUM SAGITTATUM Sch. Bip.—CHIRIQUÍ: trail from Cerro Punta to head-waters of Río Caldera, alt. 2250–2500 m., Jan. 14, 1939, *Allen 1458* (U. S. Nat. Herb.). Not previously known north of Colombia.

JUNGIA FERRUGINEA L.f.—CHIRIQUÍ: vicinity of “New Switzerland,” central valley of Río Chiriquí Viejo, alt. 1800–2000 m., Jan. 6–14, 1939, *Allen 1367* (U. S. Nat. Herb.); liana climbing 30 m. into tops of largest trees, vicinity of Cerro Punta, alt. 2000 m., Jan. 21–24, 1939, *Allen 1520* (U. S. Nat. Herb.). Previously known from Costa Rica and northern South America.

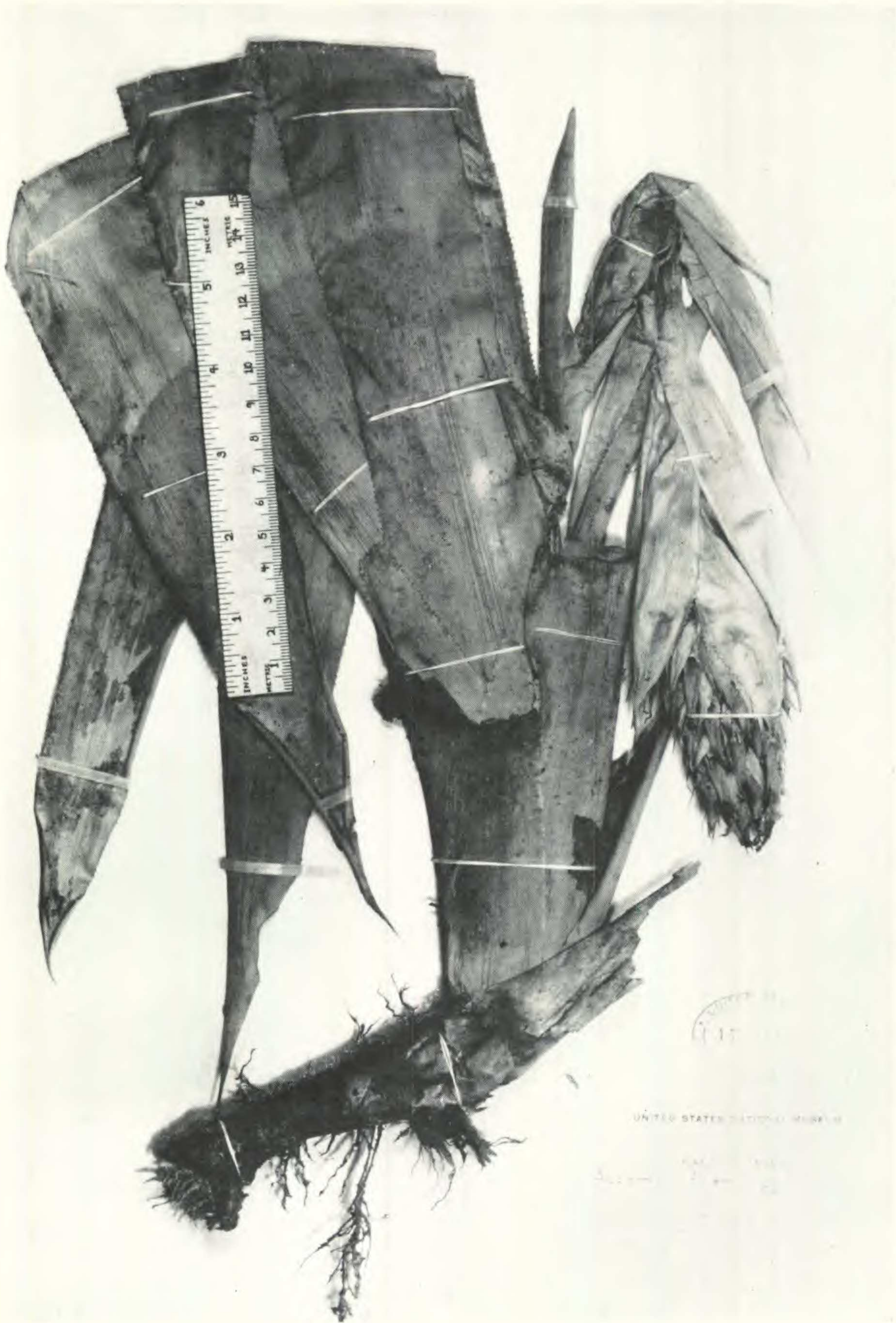


## EXPLANATION OF PLATE

## PLATE 19

*Aechmea Allenii* L. B. Smith. From type specimen, *P. H. Allen 2378*, in the United States National Herbarium.





WOODSON & SCHERY—FLORA OF PANAMA



## EXPLANATION OF PLATE

## PLATE 20

*Palmorchis trilobulata* L. O. Williams: fig. 1, plant,  $\times \frac{1}{2}$ ; fig. 2, flower opened out,  $\times 2$ ; fig. 3, lip and column from the side, natural position,  $\times 3$ ; fig. 4, column and lip with the lip expanded,  $\times 4$ .





WOODSON & SCHERY—FLORA OF PANAMA



## EXPLANATION OF PLATE

## PLATE 21

Figs. 1-6. *Pleurothallis macrantha* L. O. Williams: fig. 1, plant,  $\times \frac{1}{2}$ ; fig. 2, flower opened out,  $\times 1\frac{1}{2}$ ; fig. 3, flower from the side in natural position,  $\times 1\frac{1}{2}$ ; fig. 4, lip from the side,  $\times 3$ ; fig. 5, lip from above with one basal lobe spread out,  $\times 3$ ; fig. 6, cross-section through the middle of the lip,  $\times 3$ .

Figs. 7-10. *Epidendrum gibbosum* L. O. Williams: fig. 7, plant,  $\times \frac{1}{2}$ ; fig. 8, flower expanded,  $\times 2$ ; fig. 9, lip from the side in natural position,  $\times 2$ ; fig. 10, floral bract,  $\times 1$ .







## EXPLANATION OF PLATE

## PLATE 22

Figs. 1-2. *Epidendrum ellipsophyllum* L. O. Williams: fig. 1, plant,  $\times \frac{1}{2}$ ; fig. 2, flower opened out,  $\times 1\frac{1}{2}$ .

Figs. 3-5. *Epidendrum Allenii* L. O. Williams: fig. 3, plant,  $\times \frac{1}{2}$ ; fig. 4, flower opened out,  $\times 1\frac{1}{2}$ ; fig. 5, column (and base of the lip) from the side,  $\times 2\frac{1}{2}$ .







## EXPLANATION OF PLATE

## PLATE 23

*Epidendrum pendens* L. O. Williams: fig. 1, plant  $\times \frac{1}{2}$ ; fig. 2, flower opened out,  
 $\times 1$ .





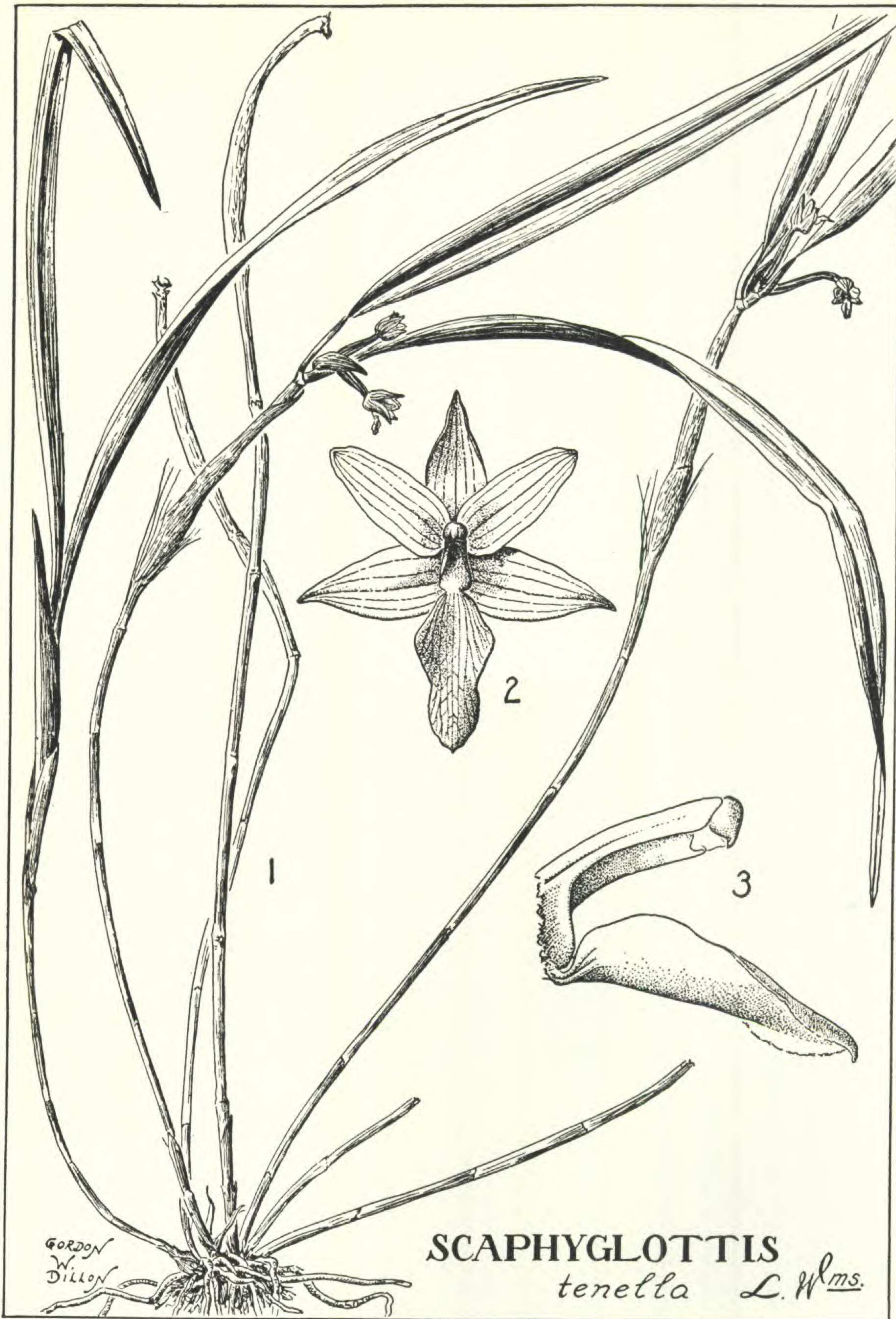


## EXPLANATION OF PLATE

## PLATE 24

*Scaphyglottis tenella* L. O. Williams: fig. 1, plant,  $\times \frac{1}{2}$ ; fig. 2, flower opened out,  $\times 2\frac{1}{2}$ ; fig. 3, column and lip from the side,  $\times 5$ .





SCAPHYGLOTTIS  
*tenella* L. Wms.



## EXPLANATION OF PLATE

## PLATE 25

*Zygopetalum parviflorum* L. O. Williams: fig. 1, plant,  $\times \frac{1}{2}$ ; fig. 2, flower opened out,  $\times 2$ ; fig. 3, lip extended,  $\times 4$ .





WOODSON & SCHERY—FLORA OF PANAMA



# THE CYTOGENETICS OF POA PRATENSIS<sup>1</sup>

WILLIAM L. BROWN

*Cytogeneticist, United States Golf Association, Green Section, Washington, D. C.  
Formerly Research Fellow, Henry Shaw School of Botany  
of Washington University*

## INTRODUCTION

*Poa pratensis* L., the common Kentucky Blue grass, is universally recognized by taxonomists as an extremely variable species. Many different strains are included within the species, and although American botanists do not generally recognize them as being sufficiently distinct to warrant their segregation from *pratensis* they are conspicuously present. Basic information on their variability, inheritance, and methods of reproduction would not only make it possible to classify the various strains more efficiently but it would allow us to use the species to best advantage for pasturage, turf, etc. It would also indicate what improvements might be expected by breeding for superior strains and the methods to be followed in making such improvements.

In this investigation an attempt has been made to correlate data from morphological, cytological, and genetical studies in an effort to arrive at a clearer understanding of the behavior of the species.

## MATERIALS AND METHODS

Materials for this study have, for the most part, come from the Missouri Botanical Garden Arboretum, Gray Summit, Missouri. In the spring and summer of 1941 additional data have been obtained from plants growing in the nurseries of the United States Golf Association, Green Section, at Arlington, Virginia. Most of these plants came originally from estab-

<sup>1</sup> An investigation carried out at the Missouri Botanical Garden in the graduate laboratory of the Henry Shaw School of Botany of Washington University and submitted as a thesis in partial fulfillment of the requirements for the degree of Doctor of Philosophy.